JANUARY 1960

THE MAGAZINE OF APPLIED TECHNOLOGY
FOR MEN WHO MANAGE

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FOOD PROCESSING

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General Foods Corporation

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Industry's leading technical men . . .

focus on technical problems for '60

begins page 23

- Most significant developments in '59
- Major problems being attacked in '60

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that's interesting

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Colorful 100,000-gal water tower, an island landmark since 1927, was built for Dole by Chicago Bridge & Iron Company.

Everything but the chirp!

British bird watchers protested to the Society for the Prevention of Cruelty to Animals against London shops selling canned sparrows in at least two different flavors.

For more information on product at left, circle 6135 see information request blank opposite last page.

that's interesting

More new products now 'mothered' by management

Growing trend toward general management responsibility for new product planning is indicated by survey recently completed by Marketing Division of American Management Assn., 1515 Broadway, New York 36, N.Y.

Although only 41 per cent of responding firms (102 out of 252) handle such coordination at the general management level, 61 per cent said that best results can be obtained when product planners report to the president, executive vice president or general manager.

As to outstanding future consumer product "trends," most responding companies in this category look for products that embody more and better features which build uniqueness and identity. Surprisingly, very few firms said they were looking for more glamorous, appetizing or luxurious products.

Staph of life!

Food poisoning, which attacks an estimated 60,000 to 90,000 US citizens annually, is usually the fault of the consumer, not the processor, says Dr. Gail M. Dack, professor of microbiology and director of the University of Chicago's Food Research Institute.

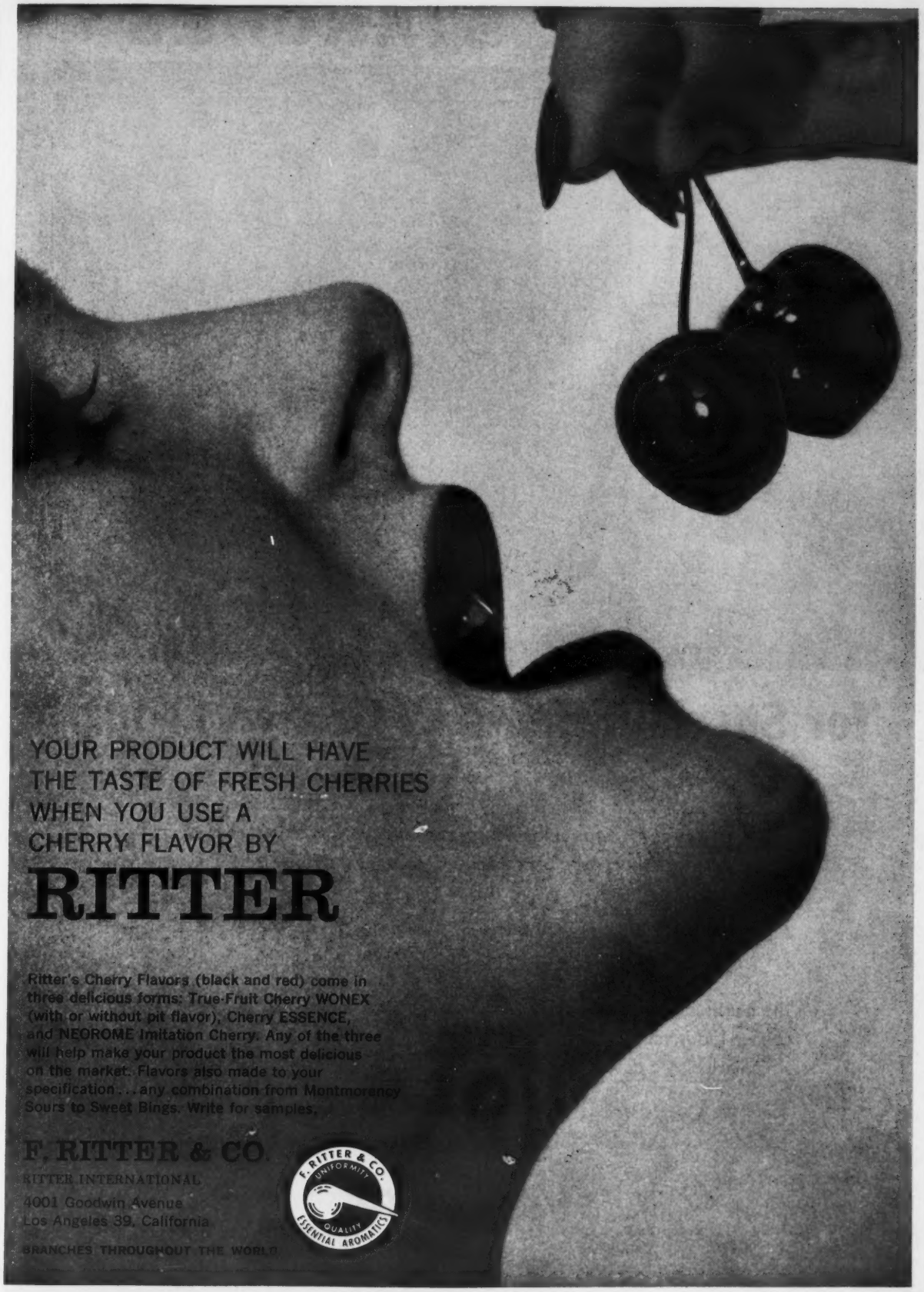
It makes little difference, he points out, whether food is improperly stored in an overheated kitchen in midwinter or at the picnic table in midsummer — simple precautions always must be taken at the "eating end."

Dr. Dack identifies these major food poisoning germs:

1) *Staphylococcus aureus,* a common organism which causes eight out of ten cases;

2) *Salmonella,* a bacterium, which causes about ten per cent of food poisoning;

3) *Clostridium botulinum,* responsible for the disease botulism, fatal in about 65 per cent of its cases.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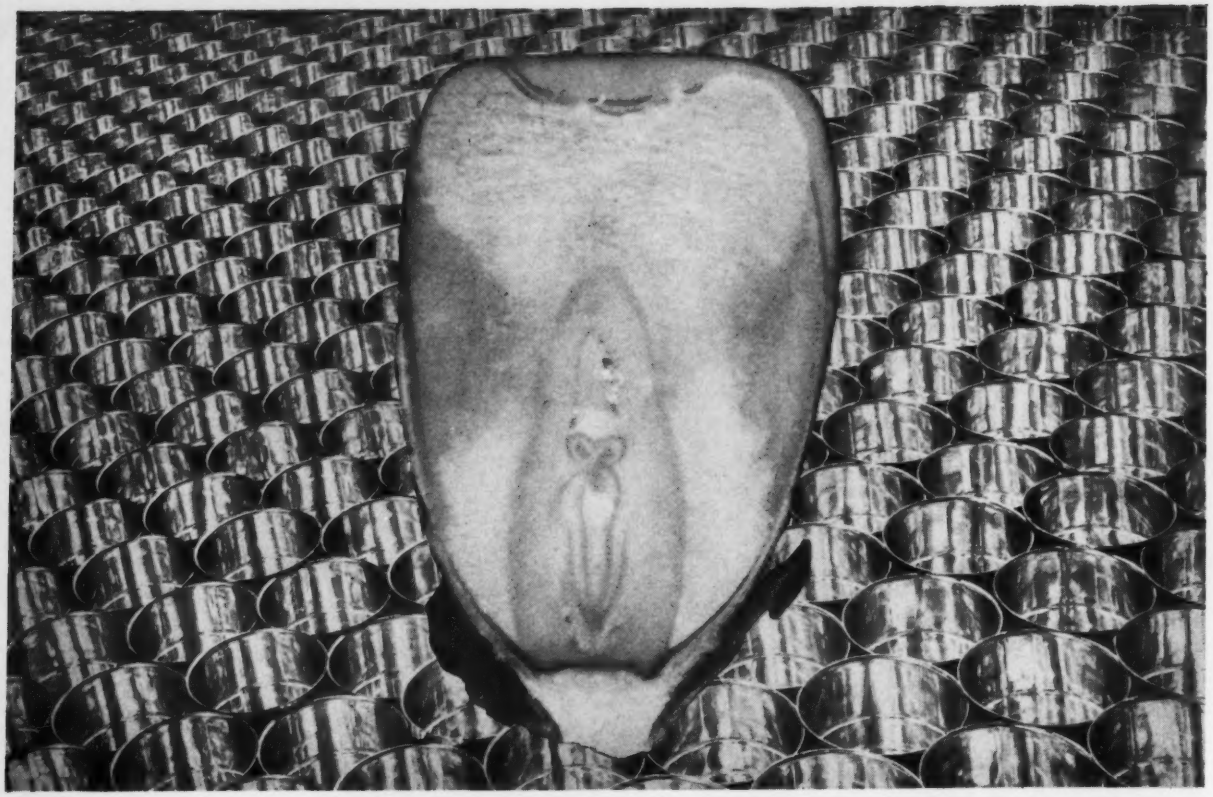

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over the editor's shoulder

The pursuit of nothingness

It's time for the food industry to speak up against such unsound, unscientific legislation as the Delaney Amendment to the Food Additives Law.

Under Secretary Flemming's zealous enforcement of this amendment, no detectable amount is permitted in a food for an additive which causes cancer when consumed in large quantities.

What this zero tolerance means, in any given case, depends on the sensitivity of the analytical procedure, which chemists are constantly refining.

Thus, one part per million, which was once the ultimate in determination of trace constituents, has been replaced in recent actions of the FDA by one-tenth part per million and twenty parts per billion.* Next, one part per trillion?

To combat this ridiculous pursuit of nothingness, it must be realized that even carcinogens have a threshold — that is, a concentration in the diet below which they do not cause cancer. An official statement in this regard is expected soon from the Food Protection Committee of the National Research Council.

Harold P. Willis

EDITOR

*For a graphic illustration of just what these traces look like on a printed page, see pages 15 and 16.

THE MAGAZINE OF APPLIED TECHNOLOGY
FOR MEN WHO MANAGE

FOOD PROCESSING

JANUARY 1960
VOL. 21 NO. 1

CIRCULATION OVER 39,000

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Roy H. Walters, Vice President, Research, General Foods Corporation
Clarence K. Wiesman, General Manager, Quality Control and Research Division, Armour and Company
James Hale, Technical Director, Research Centre, Borden Foods Company Division of Borden Company
Dr. Virgil O. Wodicka, Director Food Division, Quartermaster Container Institute
R. K. Pedersen, Director, Research, Star-Kist Foods, Inc.
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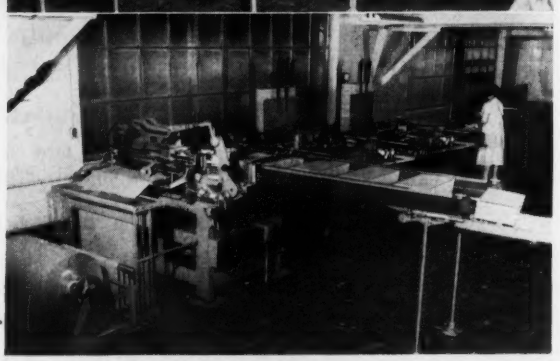

"The Hayssen accumulator and bundler has reduced our packaging labor requirements far below that which was needed by the semi-automatic system it replaced," reports Mr. W. Schneider, Chief Engineer of Schulze & Burch Biscuit Company. The equipment includes an accumulator, bundler and automatic labeler. The photos were taken in the firm's Chicago plant.

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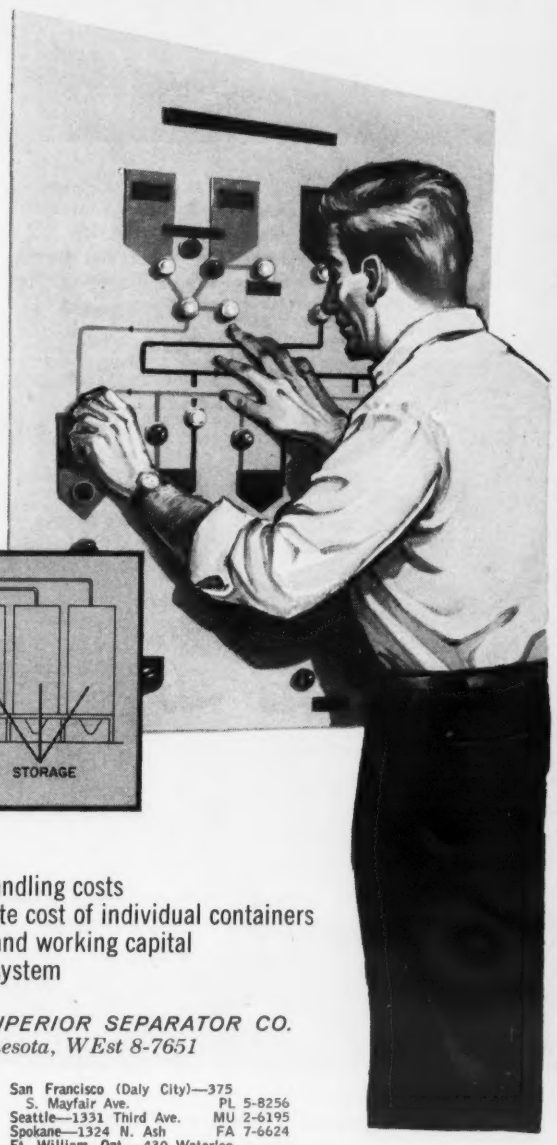

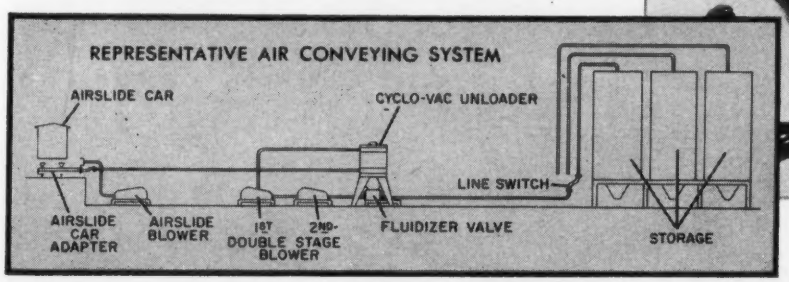

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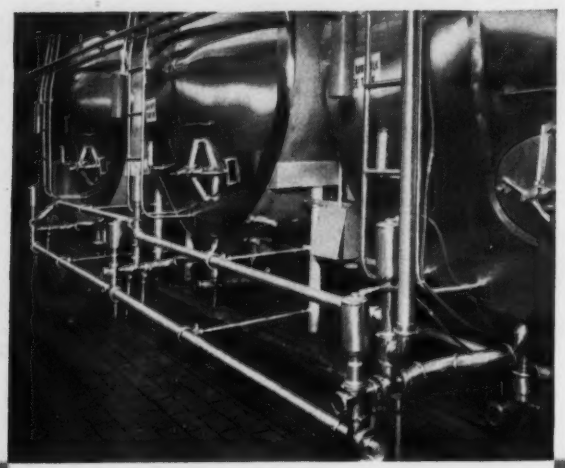
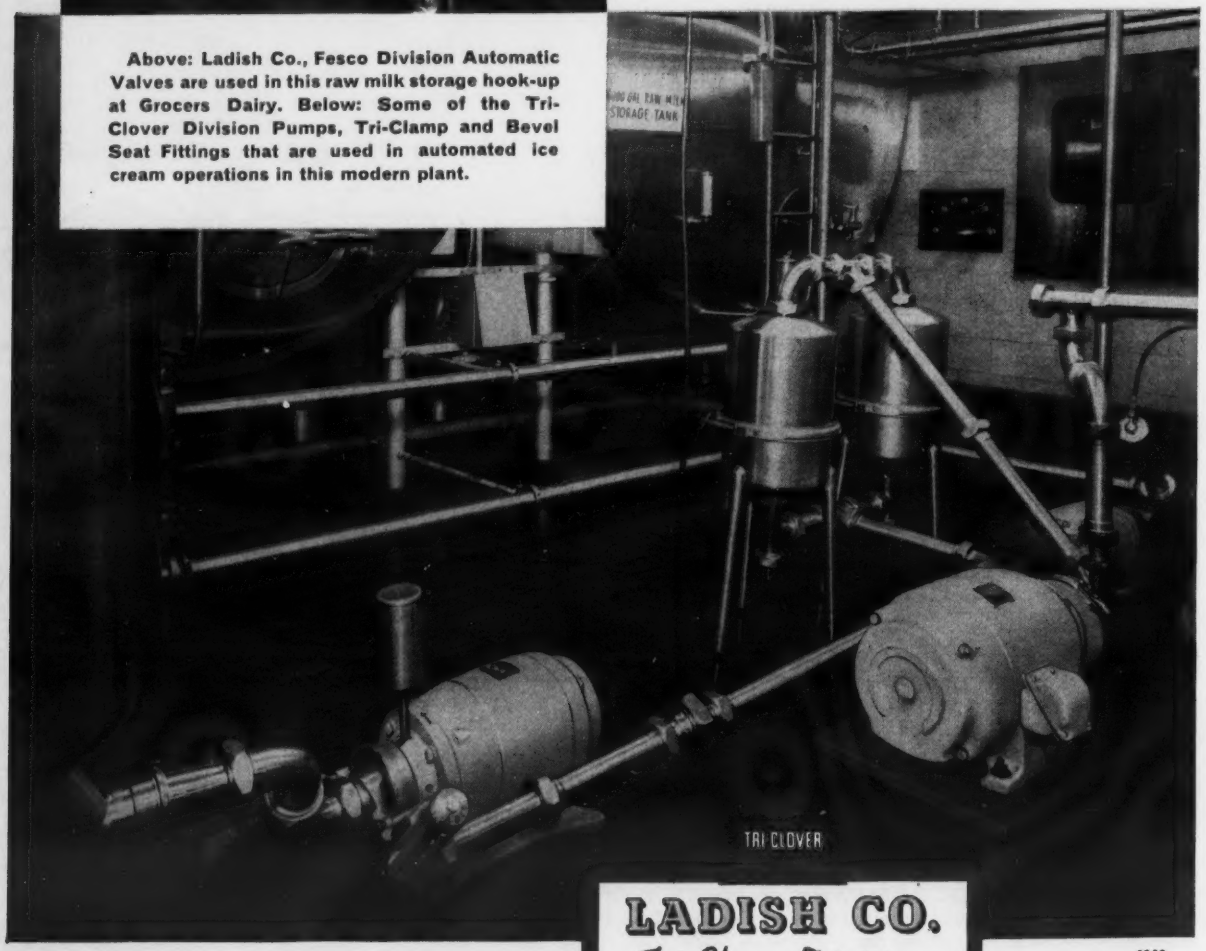


Guarding against contamination, protecting product quality, and assuring an uninterrupted flow of materials in this modern, automated Grocers Dairy plant in Grand Rapids, Michigan, are numerous Tri-Clover quality stainless steel fittings, valves and centrifugal pumps.

Tri-Clover Division products are selected for jobs like this because of their reputation for highest quality materials and workmanship . . . and for the fact that they meet the strictest sanitary requirements throughout the dairy, food and beverage industries.

Above: Ladish Co., Fesco Division Automatic Valves are used in this raw milk storage hook-up at Grocers Dairy. Below: Some of the Tri-Clover Division Pumps, Tri-Clamp and Bevel Seat Fittings that are used in automated ice cream operations in this modern plant.



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. . . the predominant ingredient of new, premium "Cornette" margarine, provides cholesterol-lowering linoleate content that reportedly is "two or three times that of any other margarine on grocery shelves, and five to eight times as much as butter." According to Best Foods Division of Corn Products Company, "Cornette" nevertheless retains the excellent appearance and eating qualities of the better (hydrogenated) margarines. Test marketing is underway in six medium-size cities in the East and Midwest.

Non-alcoholic 'bubbly' . . .

. . . a near-perfect double for the real thing (right down to the popping cork), is being introduced by Blendix Products Company, 601 W. 26th St., New York 1, N.Y., as an ideal champagne substitute for children's and teens' parties, for party-goers who "don't drink," invalids, etc. Produced from the same white grapes pressed for the finest American champagnes, "Tiara Celebration" is packaged exactly like its alcoholic cousin. Retail price in New York City and certain states is $1.79 for a 4/5-qt bottle, or $18 per case of a dozen.

PRODUCTS AND PACKAGES

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Package preserves pure product . . .

. . . providing hermetic seal that gives jams and jellies indefinite shelf life without preservatives. At J. M. Smucker Company plant, Orrville, Ohio, half-oz containers are formed from aluminum foil, coated with a heat-sealable compound, filled with hot product and sealed with die-cut foil-paper laminated lids (also coated with heat-sealable compound) on special machine. Same unit also can form two-oz containers.

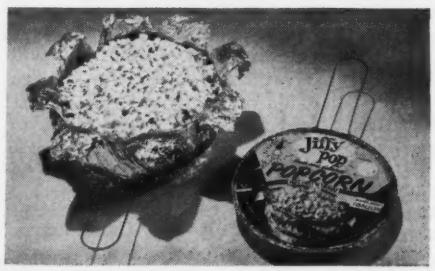
(Aluminum foil stock coated with heat-sealable compound is supplied by Aluminum Company of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.)
For more information circle 6338.

(Machine for forming, filling and hermetically sealing unit containers of jelly was developed by United Shoe Machinery Company, 140 Federal St., Boston 7, Mass.)
For more information circle 6142.

Facing up to display problem . . .

. . . new pouch for Armour Dried Beef has a three-ply lamination of cello-foil-poly on front (left in photo), featuring roto-printed illustration. Since package usually is displayed face up, lamination protects contents against lighting. For product examination by customer, reverse side consists of transparent cello-poly lamination. Recipe is flexographic-printed on transparent side.

(Armour Dried Beef vacuum pouch by Milprint, Inc., 4100 N. Holton St., Milwaukee 1, Wis.)
For more information circle 6141.



'Pop' goes the package . . .

. . . once three minutes of heat have brought the already seasoned and salted contents to the proper state of expansion. Designed and patented by Mennen Food Products, Inc., La Porte, Ind., with technical assistance from Reynolds Metals Company, Richmond 18, Va., new "Jiffy-Pop" package consists of a wire-handled aluminum foil "frying pan" covered with an inflatable aluminum foil top. Expanding cover unwinds in three min into a large sphere to accommodate one gal of fresh, hot popcorn.

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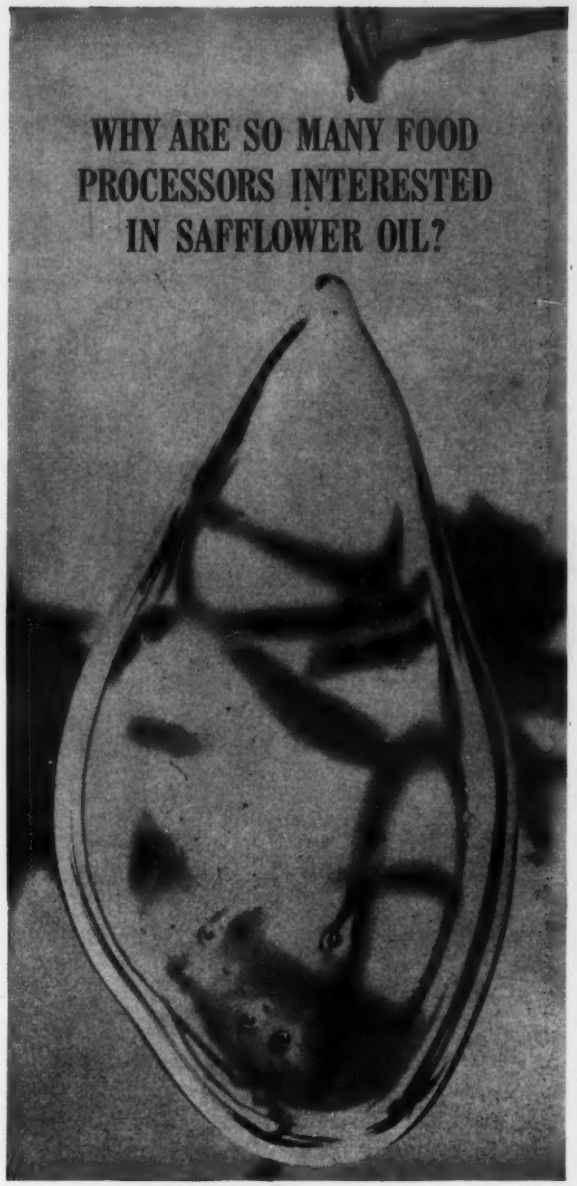
. . . for packaging applications involving high wet strength, grease resistance or direct wrapper contact with products of high oil content, is reported to function smoothly and efficiently on conventional automatic heat-seal wrapping equipment. Material can be heat-sealed face-to-face or face-to-back. Glossy surface gives point-of-sale appeal. Applications include packaging scrapple, and packaging or overwrapping candy, butter, cheese.

(Heat-Seal Patapar Vegetable Parchment is development of Paterson Parchment Paper Company, Bristol, Pa.)
For more information circle 6143.



Food processors are turning more and more to the use of Safflower oil. For good reason: Research relates Safflower oil to the reduction of cholesterol in the blood. Safflower oil is over 90% unsaturated. It is over 76% linoleic acid—*containing more essential fatty acids than any other available vegetable oil or shortening.*

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plants companies personalities

Hunt Hamill has been elected vice president and general manager of **Bireley's Inc.**, Chicago. He continues as vice president and general manager of Krim-Ko Corp., which purchased Bireley's in August. Hamill is a director and executive committee member of the National Dairy Council, and a director of the Chocolate Milk Foundation.

Manning M. Exton, formerly vice president of marketing with Seabrook Farms Company, has joined **Stokely-Van Camp, Inc.**, and will initially be assigned to the Frozen Foods Division in Oakland, Calif. With Seabrook, he was largely responsible for origination and development of the line of quality precooked boil-in-bag frozen vegetables and entree products.

James O. Bowen, newly appointed vice president of the **Sealtest Foods Division** of **National Dairy Products Corporation,** will continue as general manager of Sealtest Foods Southern Division, with headquarters at Charlotte, N.C. As Sealtest vice president he succeeds **Wiley S. Obenshain,** who is retiring after almost 45 years with the company.

Libby, McNeill & Libby, Chicago, has elected **Harry R. Mathis** vice president. A 30-yr veteran with Libby, he will have charge of the frozen foods division, succeeding **Alfred J. Hoefer,** re-assigned to special duties in the president's office.

The Pillsbury Company is beginning construction of a $1 million-plus flour mill in its East Los Angeles (Calif.) complex which already includes a 1¼-million-bu grain elevator, warehouses, refrigerated foods plant and the company's Los Angeles offices. Scheduled for initial production in fall 1960, the 4000-cwt-daily-capacity mill will supplement production of Pillsbury mills in Sacramento and in Ogden, Utah).

food regulations

Under Secretary Flemming's zealous literal enforcement of the Delaney Amendment . . .

FDA pursues traces of additives down to two parts per billion

The "harmless per se" doctrine implicit in the Delaney Amendment has industry more concerned than ever as chickens followed cranberries in the headlines.

The synthetic fat-distributing hormone, stilbestrol, is now banned for use in poultry. Only one per cent of the chickens produced in this country, however, are treated with stilbestrol. Its principal use is in the raising of beef cattle.

HEW Secretary Arthur S. Flemming emphasized that there was no violation of the FD&C Act in the sale or use of stilbestrol.

During meetings with HEW manufacturers agreed to voluntarily remove the product and the chickens treated with it from the market. FDA is now acting to revoke licenses for the use of stilbestrol in poultry.

As a result of newer, extremely sensitive testing methods, residues (20 to 100 parts per billion) of stilbestrol were detected in the skins, livers and kidneys of treated chickens. Further, according to FDA the hormone has been found to induce cancer in test animals when included in their diet in large doses over a long period of time.

No residues have been detected in beef, mutton and lamb under tests sensitive enough to reveal traces of the chemical as small as two parts per billion.

It is interesting to note that two parts per billion is 500 times one part per million — once the ultimate in analytical chemistry. One part per million is graphically illustrated on a special insert — pages 15 and 16 of this issue. Two parts per billion would be represented by one dot in 500 such inserts!

In May of last year, FDA stopped taking new applications for the use of stilbestrol when it leaves any residues in animal or human food.

This was an interpretation of the Delaney Amendment which bans any food additive found to induce cancer in man or animal.

The statement of policy announcing this "freeze," last May went on to declare that all prior sanctions for such substances would be reviewed. As as result of the review, the action on poultry was taken.

Drugs which leave residues in food and which are being used in accordance with permission granted prior to the enactment of the Food Additives Amendment are exempted from the Delaney clause — When such a prior sanction exists the burden of proof is on the Government to prove such substances are unsafe.

At the same time Secretary Flemming announced his action on poultry, he revealed that he is thinking about asking Congress to "get rid of the grandfather clause concept".

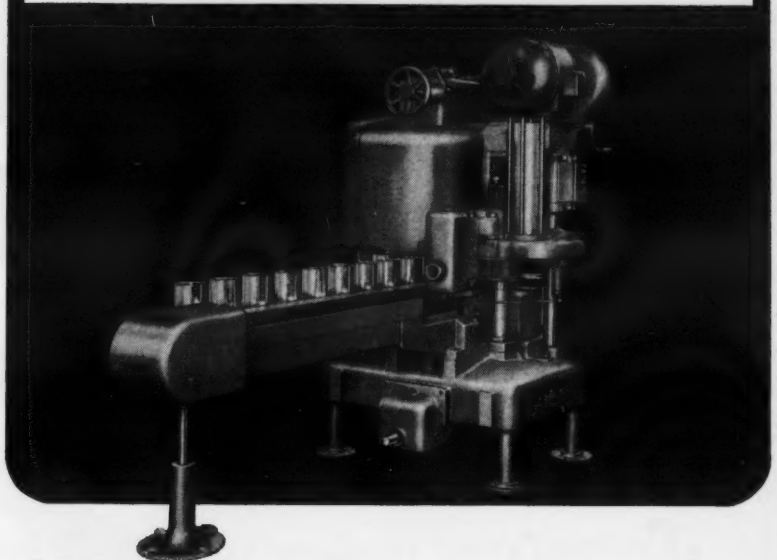
Prior-sanction applications should not be allowed when new evidence is had that products covered by these sanctions are unsafe, the Secretary explained. He continued:

"It doesn't make good sense when dealing with matters of public health . . . that we can't approve new applications

(*Continued on next page*)

Swing To...

ANGELUS
CAN CLOSING MACHINES



Welcome *to Angelus Booth No. 219*
Annual Canning Machinery & Suppliers Association Convention
Miami Beach—January 17-20, 1960

SINCE 1916 ANGELUS 50 YEARS OF SERVICE

On this, the occasion of our 50th anniversary, we especially invite you to visit the Angelus exhibit . . . to see the characteristics of dependability of operation, economy and simplicity of maintenance, and low investment costs that influence canners and can makers the world over to swing to Angelus Can Closing Machines.

ANGELUS
Sanitary Can Machine Company

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Staley's Food Production Tips

in taste,
body,
color,
sheen,
profits...

Sweetose makes the d[illegible]rence! H[illegible]e's why!

In tomato catsup, Sweetose protects against browning. Holds rich, red color. Improves gloss and sheen. Enhances flavor. Extends shelf life.

In pork and beans, Sweetose insures precise control of browning and sweetness—with tangier, more appetizing flavor—improved color and sheen.

Whatever you process—whether sweet pickles, pork and beans or tomato catsup—bland, crystal-clear Sweetose Corn Syrup will improve the quality of your products.

Where sweetness is important, the unique characteristics of versatile, enzyme-converted Sweetose assure *balanced sweetness*, giving sweet pickles a firmer, crisper body—mellower flavor and brighter sheen, with faster finishing, less softening. Where color and sheen are important, Sweetose holds rich, natural color—gives an appetizing gloss and sheen that wins sales. And taste? Sweetose delivers a tangier, zestier flavor without masking even the most delicate spices.

These are but a few of the many advantages of Sweetose. For complete information on how Sweetose gives your products the characteristics your customers want most—and at *definite sweetener savings* for you, contact your Staley Representative at the branch office nearest you, or write today.

A. E. STALEY MFG. CO., DECATUR, ILLINOIS

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Sweetose®

THE ORIGINAL ENZYME-CONVERTED CORN SYRUP

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(*Continued from preceding page*)

but follow a different procedure on outstanding applications." (Existing applications)

On the happier side for industry, Secretary Flemming also indicated that he may ask Congress to relax the Delaney clause in this respect: So that FDA would not have to automatically turn down use of any food additive found to be cancer inducing even though it is clearly established that no residue is left in the food.

"This needs to be taken a look at," the HEW Secretary added.

For example, HEW is taking the following position on existing sanctions for use of stilbestrol in cattle feed: that since there is no residue in human food, it cannot be shown that the use is unsafe.

Therefore, applications now in effect will not be revoked.

However, new applications for use of stilbestrol in cattle feed are already being turned down because of the test findings. Use of stilbestrol in pellet form is allowed (when it leaves no residue in meat) for cattle and sheep. Implanting a pellet in an animal is not considered an additive.

As the Delaney Amendment becomes more of a headache, industry anxiously awaits a report of foremost academic toxicologists. The report, scheduled for release in about two months, concludes that there is a safe level of human intake of carcinogens. However, even if it would be possible to set a tolerance for a carcinogen, the Delaney Amendment, as now interpreted, would forbid use of any carcinogenic additive.

No blanket extension for additive clearance

The rapidly approaching March 6 deadline for food additive clearance is industry's most pressing problem, spokesmen say. But FDA is sticking to its intepretation of the law — that there can be no blanket extensions of the deadline. Under the terms of the law, the Secretary of HEW can extend the deadline for

approval to March 1961 on an individual product — if the extension "involves no undue risk to the public health" and if "conditions exist which necessitate the prescribing of such an additional period."

A detailed statement of conditions for obtaining an extension will be published in the Federal Register. Generally, here's what HEW-FDA will need to know in considering requests for extension:

(1) The name and chemical composition of the food additive for which extension is granted.

(2) The uses for which extension is requested and what the intended physical and technical effect of the additive is in such foods.

(3) The amounts of the food additive expected to remain in the foods.

(4) Why a food additive regulation has not been requested, if no request has been made.

"And most important, of course" HEW Secretary Flemming says, "we will need evidence indicating that the proposed (continued) uses of the additives will not jeopardize the public health. We will grant no extension for any food additive which has been found to induce cancer when ingested by man or animal, or which has been found after tests that are appropriate for the evaluation of the safety of food additives to induce cancer in man or animals."

Any chemical now used in foods which is not generally recognized by appropriate experts as safe for its use will have to be discontinued as of next March 6, — unless a clearance has been obtained for it or an extension of time granted for obtaining a clearance.

"Since the processing of requests for extensions will be time consuming, we recommend that manufacturers who wish to apply for extensions submit their applications in the near future. Of course, where the data are available to support a petition for a food additives regulation, the petition itself should be submitted and extension of time re-

(*Continued on next page*)

CCA

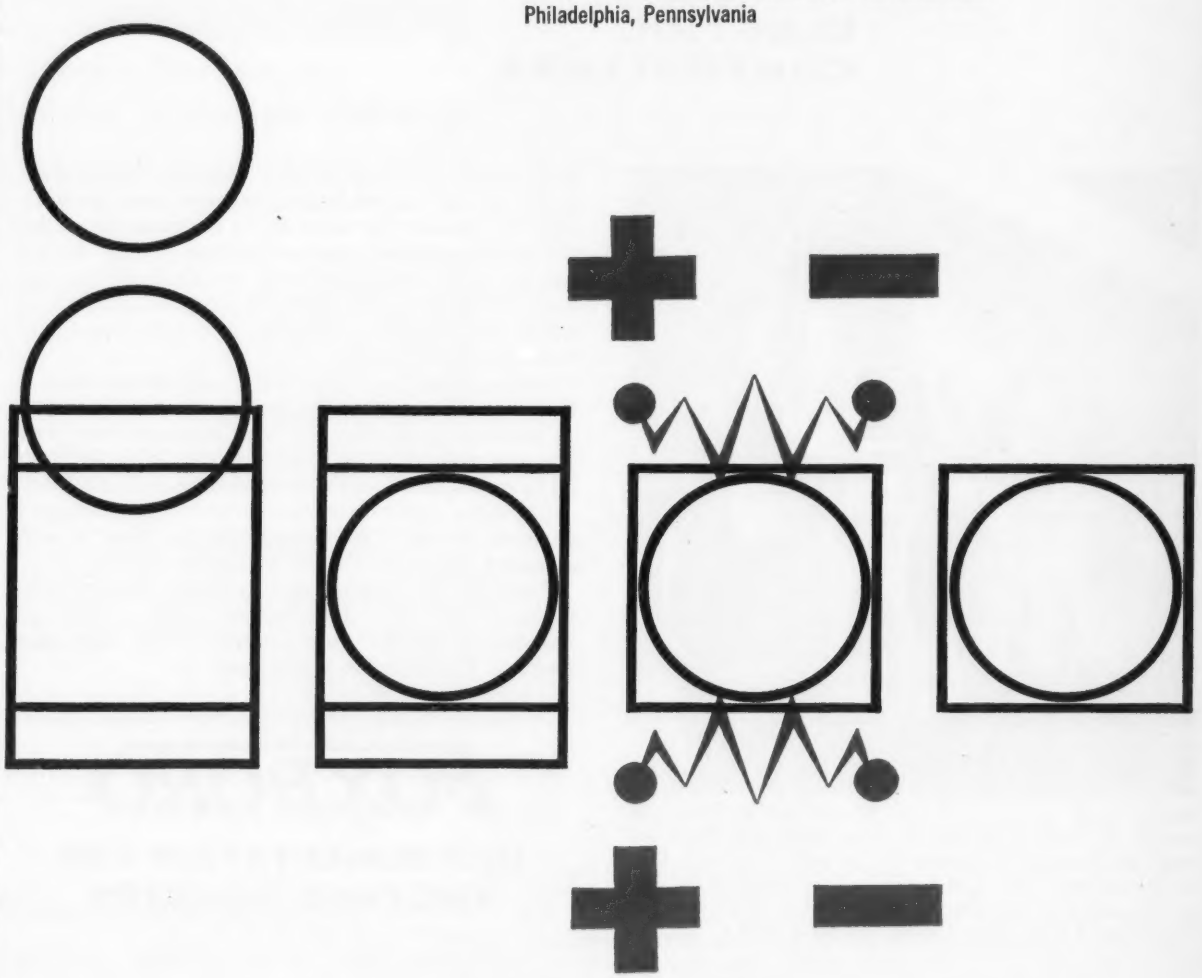
FOLDING CARTONS
SHIPPING CONTAINERS
SEFTON FIBRE CANS
PLASTIC PACKAGING

new **di-electric sealer**

puts profits in your package

A new advance in automatic packaging, CCA's Concora Di-Electric Sealer, now offers profit opportunities for **unwaxed** as well as wrapperless waxed cartons. Successfully proven in the frozen food field, this high-speed machine positively seals carton flaps by the heating action of radio waves on cold glue and provides a **better bond.** The high-frequency waves have no effect on carton contents. Di-Electric Sealing provides not only the cost savings of foolproof, high-speed production, but increased profits resulting from superior product protection and merchandising advantages. This innovation is typical of CCA's total packaging service. **Fully available to you,** it is a service based on a knowledge of all phases of production, distribution and handling. Write or call for details on the Concora Di-Electric Sealer and its wide range of application.

CONTAINER CORPORATION OF AMERICA
Valley Forge Marketing Center, 5000 Flat Rock Road
Philadelphia, Pennsylvania



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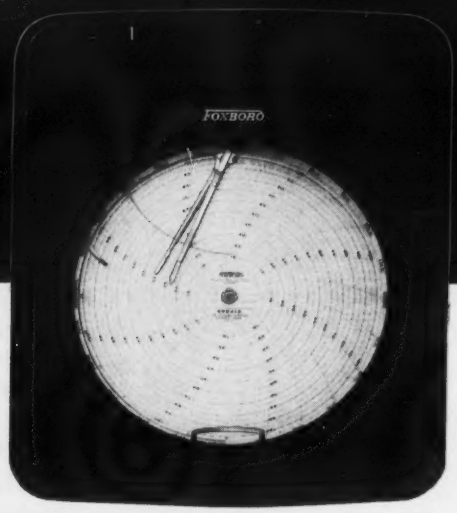
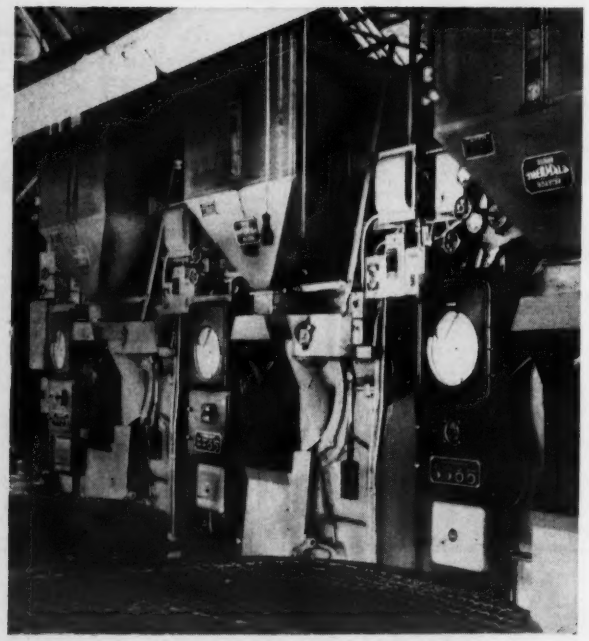
simple answer to complex control problems =



ROTAX*

ROTARY CONTACT ELECTRIC CONTROLLERS



Perfect control of coffee bean color is maintained by Rotax Controllers on coffee roasters shown above. Rotax turns down gas flame when temperature reaches 30°F below desired roast — turns it off completely when final temperature is reached. Rotax Controllers also open and close valves for quench water, open and close stack dampers to vent steam and flying chaff.

Here's new simplicity for your complex control operations. In the Foxboro Rotax Controller, unique rotary electric contacts (as many as 7) are mounted on the shaft of a recording pen or indicating pointer. As the pen or pointer moves up scale, the shaft rotates, successively making and breaking electrical contacts — which are pre-set for desired control values. And that's all there is to it!

Rotax control can solve many processing problems. It starts and stops motors, pumps, heating elements — in fact, practically any final operator. And you can use it for simple on-off control (with warning lights and alarms), or for complex sequencing control.

Exclusive platinum-irridium rotary contacts insure complete freedom from maintenance. They're self-cleaning, non-corroding — will last a lifetime.

Find out about this simple, versatile electric controller. Write Foxboro for Bulletin 4-10A — it has all the details. **The Foxboro Company, 921 Neponset Avenue, Foxboro, Massachusetts.**

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FOXBORO
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INSTRUMENTATION FOR THE FOOD INDUSTRY

6149 on Reader Service Slip.

WORTH FRAMING!

A copy, suitable for framing, of the "One Part Per Million" foldout, which appears on the opposite page, will be sent in a mailing tube to readers remitting one dollar to cover handling costs. Quantity prices on request.

Send check or money order to: The Editor, FOOD PROCESSING, 111 East Delaware Place, Chicago 11, Illinois.

(*Continued from preceding page*)
quested only where it appears that there is not sufficient time for processing of the petition," Secretary Flemming added.

There is some speculation about an extension of the deadline through Congressional legislation. This prospect, however, looks rather dim at the present time.

A mid-December tally on food additive petitions looked like this: 57 received, 19 officially filed, 5 approved.

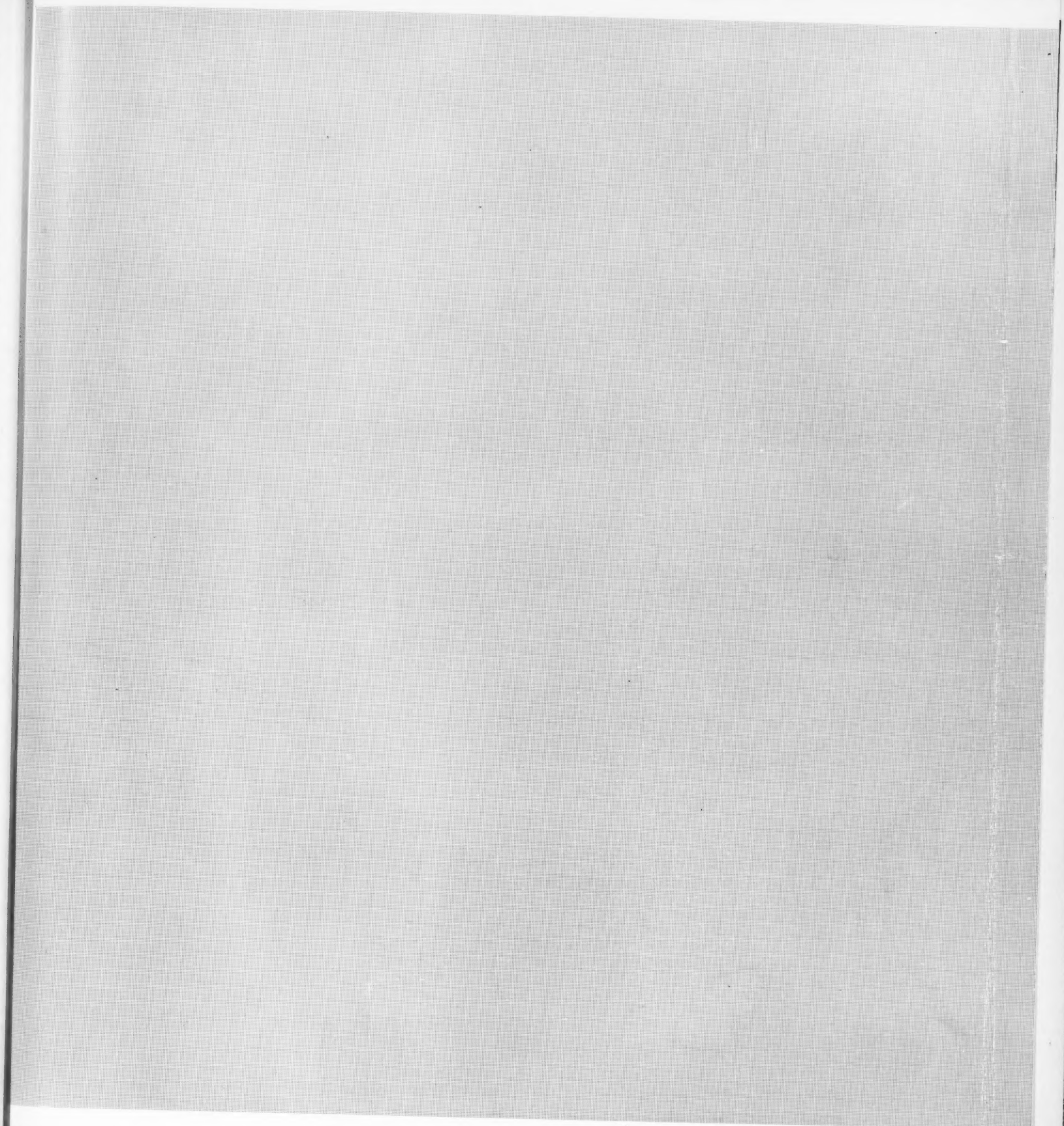
New poultry regulations become effective

New amendments to the Poultry Inspection Regulations, become effective this month. The amendments provide for the use of processing techniques and chilling methods which minimize moisture absorbed by poultry carcasses during processing.

Also, the amendments would:

1. Require inspectors to make periodic weight tests before and after chilling.
2. Regulate type of cuts to be made prior to chilling.
3. Require acceptable poultry slaughtering procedures.
4. Clarify provisions for marking net weight on immediate and shipping containers.

Copies of the amendments are available from the Agricultural Marketing Service, USDA, Washington 25, D.C.



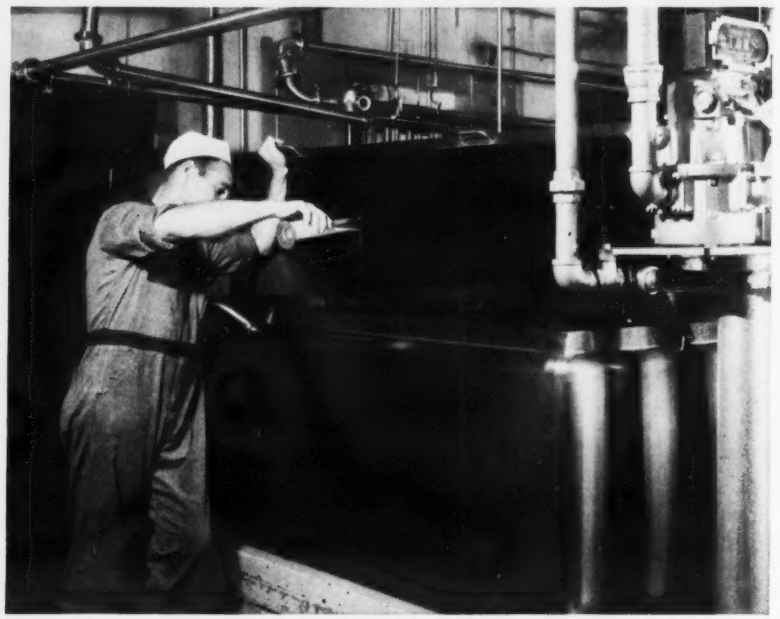
Lake Shore Photo Engraving Company

One Part Per Million

Each dot of the engraving on this sheet is exactly one part per million for it is one of one million dots. Not much really . . . but ten times as much as the amount of one-tenth part per million insecticide residue which led FDA to seize cranberries . . . and fifty times as much as the amount of twenty parts per billion of hormone residue which led FDA to ban its use in poultry.

SILICONE NEWS from Dow Corning

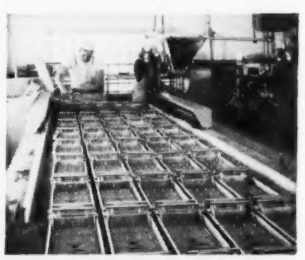
Prevent Costly Foam



Dow Corning Silicone Defoamers Reduce Waste, Increase Capacity

Foam is costly . . . it takes up production space, slows down processing, causes maintenance problems—may even create a fire hazard! You can control foam once and for all with the most effective antifoams ever developed: Dow Corning silicone defoamers.

Odorless, tasteless, and physiologically harmless, Dow Corning silicone defoamers are used extensively in processing and packaging foods, syrups, and antibiotics. Effective at extremely low concentrations and safe to use, they neither alter nor contaminate the end product. Dow Corning Antifoam A may be used in nonstandard foods at concentrations to 10 ppm; water-dilutable Antifoam AF Emulsion may be used at concentrations to 34 ppm.



IN FREEZING MIXES

A typical application: in making Fudgsicles, foaming of milk, chocolate and other ingredients caused numerous rejects of frozen bars and also cut production space. Antifoam AF Emulsion added to the processing prevents foam . . . helps keep production up and costs down.

IN ANTIBIOTICS

Write for a FREE SAMPLE giving an indication of your foaming problem and whether it's in an aqueous or oil system. Address Dept. 5701.

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Dow Corning CORPORATION
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food regulations

FDA to move against

Misleading "Cholesterol" Advertising

Unsaturated fat food products are now considered "misbranded" under the FD&C Act if they claim in their labeling to reduce blood cholesterol and prevent heart attacks and strokes. FDA also hopes to "head off false and misleading promotions" based on "incomplete" scientific data.

FDA's position was made official and enforceable in a recently released policy statement.

Addition of unsaturated fats and oils to the *otherwise unchanged ordinary diet* will not reduce blood cholesterol and prevent heart attacks and strokes, FDA said.

In commenting on the policy statement, Commissioner George Larrick pointed to the widespread interest in the possible relationship between blood cholesterol levels and heart and artery diseases. As a result, he explained, reference to the term "cholesterol" in the labeling of salad oils, shortenings, oleomargarine, and similar products may have the effect of a claim of special value for preventing or treating these diseases.

Commissioner Larrick pointed out that the policy statement "does not interfere in any way with legitimate research and clinical evaluation of unsaturated fats in the diet.

"Scientific investigations of fatty substances as a possible factor in lowering blood cholesterol and preventing heart disease should be continued," he said.

"It is our responsibility, however, to point out that the public has been misled into relying prematurely on data which are still experimental, incomplete, and contradictory . . . ," Commissioner Larrick added.

FDA further pointed out the view of nutrition scientists that it is *impracticable for a person to add enough unsaturated fats to an otherwise unchanged diet to bring about any significant change in blood cholesterol.* Increased weight, they add, is the only result that is likely to be achieved by increasing intake of fats.

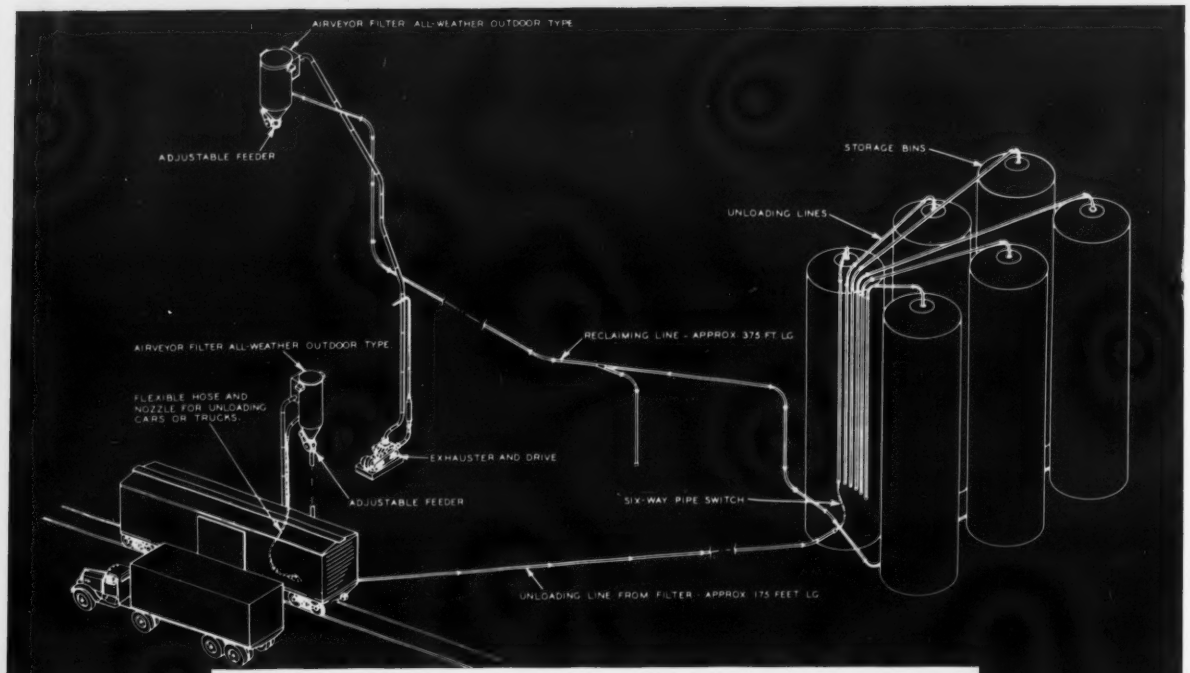
The FDA policy statement follows:

3.41 Status of articles offered to the general public for the control or reduction of blood cholesterol levels and for the prevention and treatment of heart and artery disease under the Federal Food, Drug, and Cosmetic Act.

(a) There is much public interest and speculation about the effect of various fatty foods on blood cholesterol and the relationship between blood cholesterol levels and diseases of the heart and arteries. The general public has come to associate the term "cholesterol" with these diseases. A number of common food fats and oils and some other forms of fatty substances are being offered to the general public as being of value in the control or reduction of blood cholesterol levels and for the prevention or treatment of diseases of the heart or arteries.

(b) The role of cholesterol in heart and artery diseases has not been established. A causal relationship between blood cholesterol levels and these diseases has not been proved. The advisability of making extensive changes in the nature of the dietary fat intake of the people of this country has not been demonstrated.

(c) It is therefore the opinion of the Food and Drug Administration that any claim, direct or implied, in the labeling of fats and oils or other fatty substances offered to the general public that they will prevent, mitigate, or cure diseases of the heart or arteries is false or misleading, and constitutes misbranding within the meaning of the Federal Food, Drug, and Cosmetic Act. [*Emphasis supplied*]


AIRVEYOR FILTER ALL-WEATHER OUTDOOR TYPE
ADJUSTABLE FEEDER
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FLEXIBLE HOSE AND NOZZLE FOR UNLOADING CARS OR TRUCKS
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The arithmetic of materials handling

One man + one mill + Fuller pneumatic conveying = work of four mills

How did F. M. Brown's Sons, Inc., double production at one of their Pennsylvania mills without plant expansion? They needed increased storage area to meet new capacity requirements. What was the solution? Two Fuller Airveyor® pneumatic conveying systems were installed in their Birdsboro mill. One for rail car and truck unloading and the second system for reclaiming from storage to process.

Results—with this new equipment, one mill produces enough feed to allow Brown to use the other three mills for storage and distribution. Production is still increasing and handling costs have been cut up to $3.00 a ton.

In addition to increasing storage space, and reducing unloading time and costs, these systems are self-cleaning, thus minimizing contamination.

If you are now handling dry, bulk, granular materials, it will pay you to look into Fuller pneumatic conveying systems. Fuller systems are engineered specifically for your particular application. They bend around corners, run up or down, through walls and floors, almost any distance—even underground. Write or phone today outlining your problem. Fuller will gladly furnish additional information with appropriate recommendations.

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food regulations

FDA officially clears 182 additives as safe

A list of 182 chemicals found safe for use in food has been released by FDA. Processors who use these food chemicals do not have to furnish further proof of their safety.

The list, which appears on page 65 of this issue, is based on a proposed list of 188 food chemicals circulated to 900 experts in December, 1958. On the basis of the scientists' comments, FDA concluded that all but six chemicals could be immediately classed as safe.

Those six are the food coloring materials, carbon black charcoal, titanium dioxide, and ultramarine blue; and the emulsifiers, oleic acid and linoleic acid.

The fact that these six are not included in the final list does not mean their use in food is prohibited. It does mean that proposed usage must be reviewed for safety under provisions of the Food Additives Amendment.

The final FDA order specifies purposes of use of these chemicals in food and, in some instances, tolerances. An overriding limitation on the amounts of the chemicals that may be added to food is provided, FDA pointed out, because only usage in accordance with good food manufacturing practice will be generally regarded as safe.

Good manufacturing practice is defined by FDA to mean:

(1) That the amount of a substance *intentionally* added to food in manufacturing and processing shall not exceed what is required to accomplish the intended purpose (for example, to improve texture or nutritional value);

(2) That the amount of a substance *incidentally* added to foods in the course of processing (for example, traces of metal from processing equipment) and packaging (for example, ingredients of food packaging materials that get into food) shall be reduced as much as reasonably possible; and,

(3) That every substance used in food shall be prepared

and handled as a food ingredient and be of food grade — that is, of purity recognized by qualified experts as safe and appropriate for use in food.

Acidification of tomatoes

The Canners League of California has filed a brief objection of record to FDA rejection of acidifying tomatoes. For complete story see article on page 68.

Additive guaranty has limited legal significance

"A guaranty for a food additive would lose all legal significance when the additive is put to its intended use in food processing or packaging," William Goodrich, FDA's Assistant General Counsel told a Food Law Institute-FDA Conference recently.

The holder of such a guaranty could present it as an argument why he should not be prosecuted for an adulteration arising from use of the additive, Mr. Goodrich said.

But one might properly ask, he went on to tell the group, how the guaranty could be relied upon in good faith when the holder of the guaranty could refer to the Food Additives regulations and learn that the additive had not been cleared.

The guaranty provisions of the FD&C Act* do not cast the total risk of criminal prosecution on the chemical manufacturer offering a food additive for use in processed food. He cannot legally guarantee that food containing his addi-

(*Continued on next page*)

* Very briefly, the Federal Food, Drug, and Cosmetic Act provides that no person shall be subject to its criminal penalties for shipping adulterated or misbranded food interstate if, in good faith, he holds a written guaranty from another person to the effect that the food guaranteed is neither adulterated nor misbranded.

DIAMOND HAS THE GRADE YOU NEED . . .

. . . because the quality and grade of the salt used in food products makes a significant difference in the end-result. Diamond Crystal has a specific salt for a specific need, each with the highest uniform purity of any salt made.

Diamond Crystal Salt ends danger of spoilage, enhances and improves the taste of your product. The presence of calcium and magnesium in a less pure salt would form unappetizing scums and discolorations in some canning processes. In others, copper and magnesium could cause oxidative rancidity in foods containing fats and oils.

All salt is *not* alike and Diamond Crystal's exclusive Alberger process produces a flake-type salt that is 99.95% pure. This purity reduces to a minimum the probability of these reactions while at the same time imparting a true salt flavor.

Diamond's staff of trained food specialists are available to assist you in selecting the correct grade or type salt for your product. For more information, call the nearest Diamond Crystal sales office or write to Diamond Crystal Salt Co., St. Clair, Michigan.

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ST. CLAIR, MICHIGAN

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(*Continued from preceding page*)

tive will not be adulterated. His guaranty applies only to the additive itself.

Mr. Goodrich concluded: "Protection must be found by following the Food Additive regulations as they are published, and, in case of substances exempted under the prior sanction proviso, by inquiring into the existence and scope of any such sanction.

"We are confident that satisfactory procedures can be adopted by food processors to avoid use of food additives which would result in adulteration. Obtaining a guaranty, however, is not the answer."

Lamb, mutton grading suspended for 1 year

USDA has suspended voluntary grading of lamb and mutton for one year, effective this month. This action may add impetus to the campaign of organizations such as the American Meat Institute which would like to see the end of all Federal grading.

Last year the National Wool Producers Association asked USDA to discontinue lamb grading on the grounds that Federal grades of "prime" and "choice" called for too much fat. In July Secretary of Agriculture Ezra Taft Benson announced that Federal lamb grading would continue but that USDA would proceed promptly to revise existing lamb standards.

Meetings with industry were held and in mid-October a proposed set of revised standards was submitted to the industry by USDA. According to USDA the comments they received "clearly indicate a substantial lack of agreement within the lamb industry."

Secretary Benson said he took the suspension action with "great reluctance." He went on to say that "our grading and inspection programs are important to an efficient and effective marketing program."

The Secretary expressed deep concern over the wide differences prevailing in the lamb industry in the matter

Read how one remanufacturer figures $11,
$84
freight savings per C/L
...carload of Sterilpac drums weighs 4300 lbs. less than equivalent No. 10 cans
$216
$110
disposal savings per C/L
...Sterilpac drums have a minimum resale value of $1.00 per unit

of Federal grading.

"Suggestions from responsible groups range from complete abolishment of the service to demands that no change of any kind be made," he said.

Following the USDA announcement, the president of the American Farm Bureau Federation, Charles B. Shuman, expressed "extreme disappointment" at the action of the Secretary.

"I do not feel the Secretary has allowed sufficient time for the development of revised grade standards. His action was precipitous and not in the best interest of livestock producers," he added.

Amend standard for enriched farina

The standard of identity for enriched farina has been amended to provide for the optional use of pepsin to promote more rapid cooking.

Minor modifications of the amendments originally proposed by The Cream of Wheat Corporation were made in the final order.

The product may contain not less than 0.5 per cent and not more than 1 per cent by weight of the optional ingredient disodium phosphate; or . . .

It may be treated with one of the proteinase enzymes papain or pepsin to reduce substantially the time required for cooking. In such treatment papain or pepsin, in an amount not to exceed 0.1 per cent by weight, is added to the farina, which is moistened, warmed, and subsequently heated sufficiently to inactivate the enzyme and to dry the product.

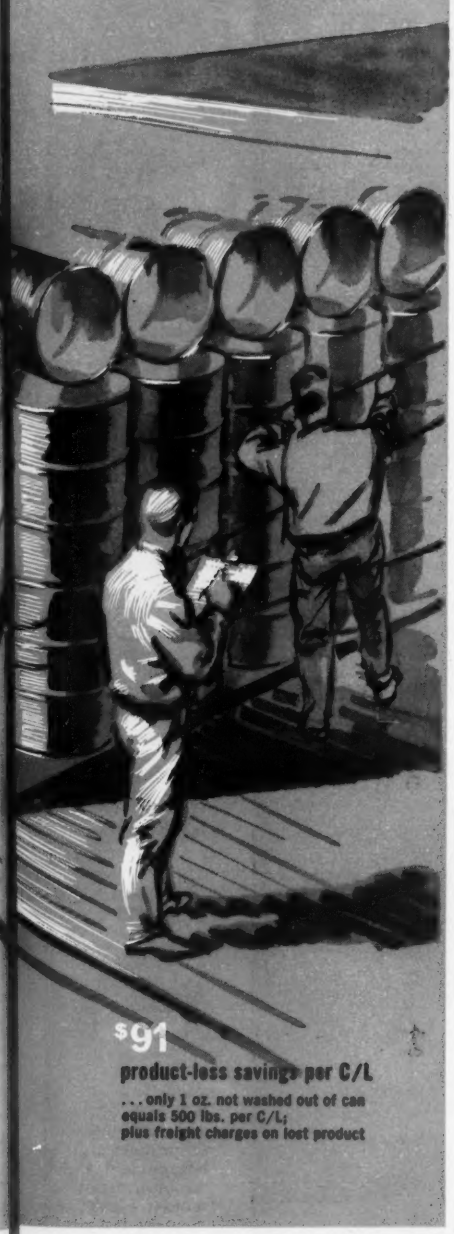
The label must bear the appropriate statements.

Next Month . . .

Top food industry executives view FDA's policy on identity standards.

000 SAVINGS

by ordering concentrates in Rheem STERILPAC Drums



These are not Rheem figures. They are figures calculated by a prominent East Coast remanufacturer who estimates he will save $501 per carload by ordering tomato concentrates in Rheem STERILPAC Drums instead of No. 10 cans. Based on his 1959 requirements of 22 carloads, savings come to $11,022... leap to $16,000 on expected 1960 requirements.

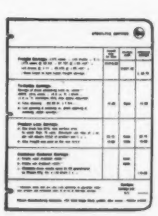
STERILPAC is a brand-new method—revolutionary in concept—that permits food remanufacturers to order concentrates in 55-gallon drums. Each king sized container is equivalent to 75 No. 10 cans. You open, empty and wash only *one* drum instead of 75 cans. No cases to open, either! In addition, STERILPAC drums weigh less, take up less storage space and bring better resale value than the smaller containers. Result: sweeping savings in freight, handling, disposal, product loss and storage costs.

Better concentrate quality comes as a bonus. By sterilizing and flash cooling concentrates *before* they are packed in the STERILPAC drums, canners eliminate potential stackburn. There are no additives involved...no refrigeration required. STERILPAC drums have been shipped across the Equator, and stored outdoors under non-freezing conditions with absolutely no loss of product quality.

Ask your supplier to send you a trial shipment in Rheem STERILPAC Drums, or write to the world's largest manufacturer of steel shipping containers for more information: Rheem Manufacturing Co., 1701 West Edgar Road, Linden, N. J.

Rheem

Figure your own savings with this easily-completed estimate form. Send for it today!



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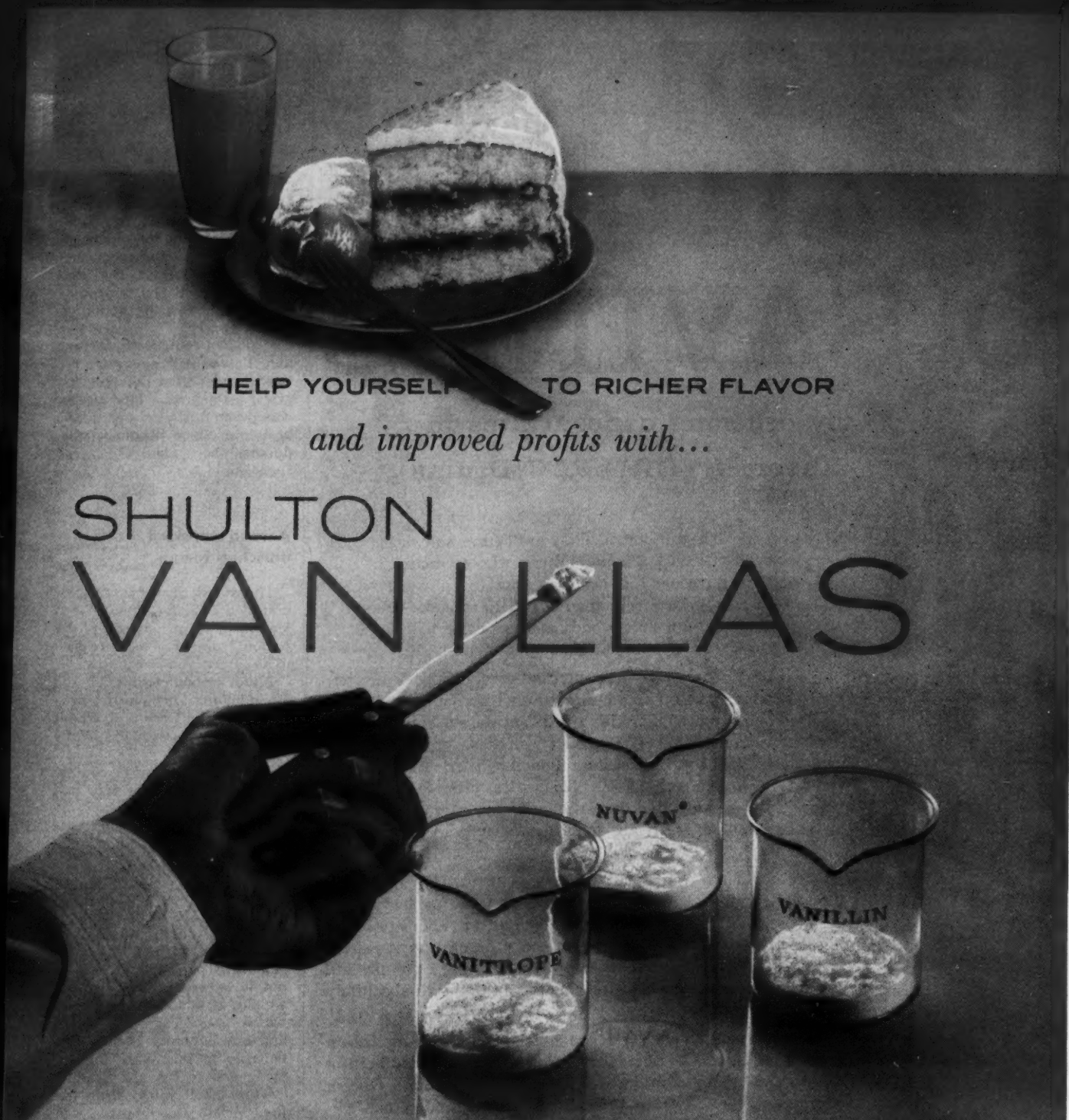

Imagine the classic flavor of the cured vanilla bean...and you have defined Shulton's true-to-nature vanillas. Shulton's VANILLIN USP is a standard for quality and blendability. VANITROPE® (up to 25 times stronger than Vanillin) also enhances flavors, gives you greatest economy. Now available are versatile NUVANs®... blends of Vanillin and Vanitrope...so adaptable for quality vanilla effects, and even more economical than Vanillin. Whether it's chocolate—cookies—ice cream—cakes...you can make it better with Shulton vanillas. And save up to 50% or more in flavoring costs. Why not write for information and samples today?

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Making good products better—through research

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JANU

Industry's leading technical men . . .

focus on technical problems for '60

- **Most significant developments in 1959**
- **Major problems being attacked in 1960**

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HELP YOURSELF TO RICHER FLAVOR

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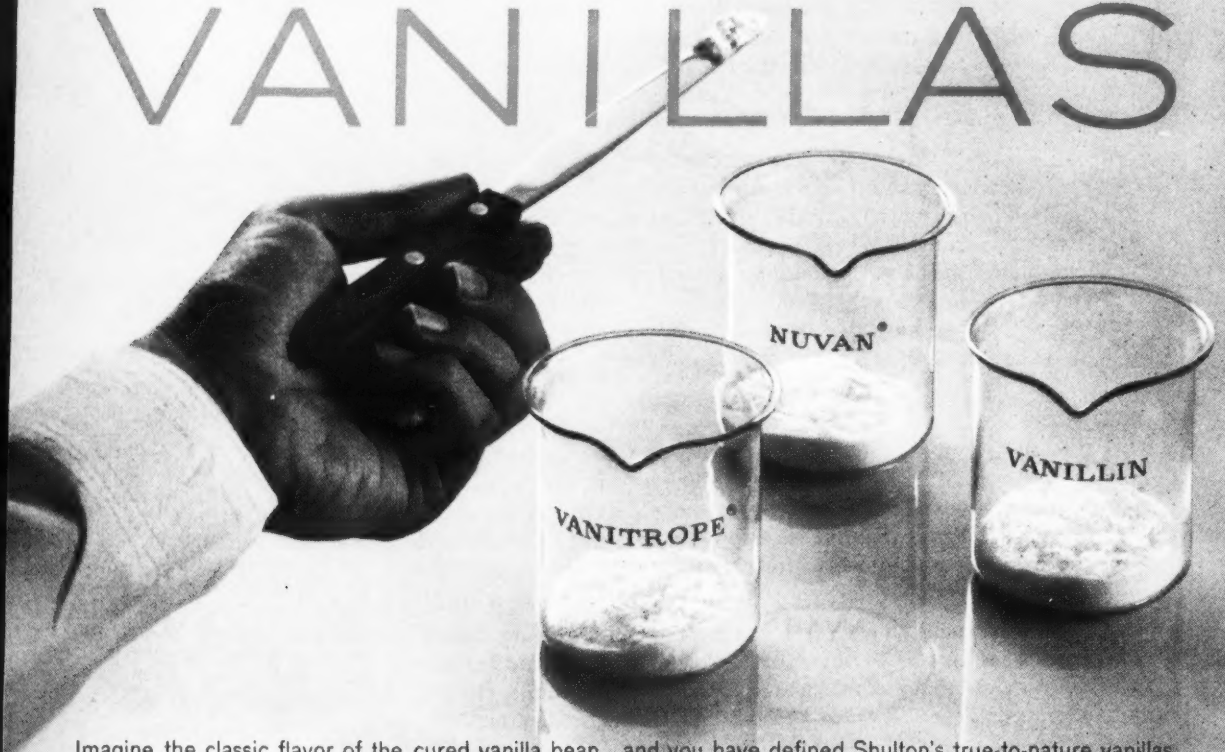
SHULTON VANILLAS



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President
Food and Drug Research Laboratories, Inc.

ROY H. WALTERS
Vice President, Research
General Foods Corporation

HANS SCHMELZER
Chief Engineer and Director of Engineering
General Mills, Inc.

JAMES HALE
Technical Director
Research Centre
The Borden Foods Company
Division of The Borden Company

C. L. RUMBERGER
Vice President
Research and Quality Control Division
H. J. Heinz Company

R. K. PEDERSEN
Director, Research
Star-Kist Foods, Inc.

DR. GEORGE GARNATZ
Director
The Kroger Foundation

DR. VIRGIL O. WODICKA
Director
Food Division
Quartermaster Food and Container Institute

K. M. STRAUSS
Vice President for Production
Pabst Brewing Company

DR. WALLACE R. ROY
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Minute Maid Corporation

CLARENCE K. WIESMAN
General Manager
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Focus on Technical Problems for '60

Additives • Packaging • C

DR. BERNARD L. OSER
President
Food and Drug Research Laboratories, Inc.

THE CURRENT YEAR has witnessed considerable confusion and uncertainty in the food and related industries concerning the legal status, under the Food Additives Amendment, of ingredients long-used in foods.

This situation may be largely resolved by the publication of the half dozen or so white lists believed to be in preparation.* But it is bound to come as a blow to many food manufacturers that their products may be in technical violation of the law after March 5, 1960.

The difficulty centers around the problem of establishing, by means of industry or government sponsored surveys, whether or not general recognition of safety exists among qualified experts. Until this is done, companies will be reluctant, and understandably so, to take the expensive scientific and legal steps necessary to gain compliance under the petition and regulation procedure provided by the law.

Many companies have been more concerned with establishing whether or not their products come under the law than with accepting what may prove to be the inevitable, and initiating chemical and toxicological studies.

It was little realized by both government and industry alike that the Food Additives Amendment would have such broad impact as has developed upon unintentional components of food such as those derived from packaging materials and veterinary drugs.

The paper and plastics industries, in particular, are confronted with the need for appraising the quality or composition of the basic cellulosic fibre or resins entering into the fabrication of their products, as well as the chemicals employed either intentionally or otherwise. Determination of the extent to which these might transfer to various types of solid and liquid foods often presents extremely difficult, sometimes insurmountable analytical problems.

The question of how to handle "insignificant" traces of unintentional additives is a most challenging one for which no acceptable answer has yet come forth.

The recent cranberry episode underlines the need for a more rational interpretation of animal experiments in terms of applying the findings to practical human usage of food additives. Extension of present administration policy to include all additives, both old and new, as well as processing treatments of food, could eliminate many items from our daily menu or create increased concern over safety of our foods.

During the coming year there will doubtless be a better realization on the part of food manufacturers of where they stand with respect to presently used ingredients, processes and packages.

At the same time, we may anticipate strong pressure for alleviation from the unanticipated consequences of the new law. •

**Of the various lists proposed, the first to be published by FDA with official recognition will be found on page 65.*

ROY H. WALTERS
Vice President, Research
General Foods Corporation

GETTING USED TO and living under the amended Food, Drug and Cosmetic Act, which goes into effect in March, will be the biggest problem the food industry has in 1960.

The requirements for extensive testing and petitioning for use of ingredients in new product formulations will act to standardize product formulation, at least temporarily. Ingenuity on the part of research will be required to formulate new and different products from the same ingredients that are available to competitors.

Looking back at 1959, the outstanding technical development in the food field was the successful development of bland vegetable proteins of high quality.

This source of protein, as a building block for product development, has opened a whole new area for the food technologist.

Products meeting the marketing requirements of protein level and quality can now be formulated. These products, based on consumer recognition of protein as an important factor in nutrition, cover a wide variety of food types from breakfast cereal to entrees. •

CLARENCE K. WIESMAN
General Manager, Quality Control and Research Division
Armour and Company

MEAT PACKERS have been devoting an important percentage of their research efforts on the development of new products and processes.

One result has been a marked increase in the conversion of carcass meats into "prepared" meat products at the packer level. On retail shelves, this has been demonstrated by the appearance of an ever increasing number of convenience foods — precooked frozen meals, boil-in-pouch items, prepackaged meat cuts and specialties.

Hotels, institutions and restaurants can also draw upon more and more pre-prepared items, ready for heating and serving.

A second major result of increased research effort has been intensification of attention in the mechanization of packinghouse processes.

The public was made aware of this as a result of the unprecedented "automation" agreement between management and the unions. This agreement provides the organization and funds for study of the automation and mechanization problem to promote opportunities for workers affected by modernization. This plan has been widely acclaimed in the press.

Developments in the field of processing equipment are generally confidential. But one may say, with assurance, that important improvements are being made in converting batch operations to continuous processes.

For the immediate future, we can expect a continuation of research in the areas discussed above. I feel that the major new problem facing us in 1960 will be learning to live with and to operate under the provisions of the Food Additives Amendment. •

JAMES HALE

Technical Director, Research Centre
Borden Foods Company
Division of Borden Company

PERHAPS THE MOST important research being conducted in the dairy industry today is directed toward reducing the cost of distribution.

One aspect of cost reduction lies in maintaining high nutritional and organoleptic acceptance values for the consumer for longer lengths of time, thus permitting a lengthened distribution life for the products.

Much progress has been made toward fully understanding the actions and interactions of the various protein, carbohydrate and fat systems in relation to keeping qualities. The newer instrumental and analytical techniques have made determination of minute quantities of substances possible. The roles of some of these "trace" substances in relation to keeping qualities are not well understood.

It is likely that investigations making use of these analytical techniques will have end results of further reducing distribution costs. •

DR. VIRGIL O. WODICKA

Director, Food Division
Quartermaster Food Container Institute

TWO MILITARY DEVELOPMENTS of 1959 are apt to have a commercial impact on the future.

The first of these is the successful preservation of fruits and meats (as examples) by thermal processing in flexible packages. Test packs of peaches, in a run split between cans and flexible packages, stood up quite well in both packages to many months of high-temperature storage.

Test runs on meats, though still in the early stages of storage tests, show every evidence of stability. When individual portions of sliced meat are packaged, the short path of heat flow permits short process schedules, with benefits to quality.

The other milestone is development, to the point of field trials, of nine complete meals of dehydrated, pre-cooked foods. These meals are prepared for consumption by adding boiling water to the package and allowing it to soak in for 15 minutes.

Key to the development of this family of quick-serve meals has been the use of freeze-drying on some of the more difficult items such as meats, large fruits and the starchy vegetables such as peas and corn.

The availability of high-performance packages has also been a large factor in success. When dehydrated foods are brought low enough in moisture content to forestall browning in storage, they become highly susceptible to oxidative rancidity.

Therefore, they must be packaged in an inert atmosphere in packages which are truly impervious to outside conditions to maintain acceptable quality. If they are to be reconstituted in the package, the package must also withstand exposure to boiling water without leakage.

Good results have been obtained with a laminate of Mylar, foil and vinyl.

Although the process of freeze-drying has been known for years, high costs have discouraged serious exploration. Attacked as a problem of military necessity, it has proved to be less formidable economically than it seemed. Savings in transportation and storage costs are important factors.

Although still in the specialty class, it appears to have definite commercial possibilities, especially for the convenience market. In fact, at least one company is selling freeze-dried products on a limited scale in the civilian market, and two others should come into production in 1960. •

C. L. RUMBERGER

Vice President
Research and Quality Control Division
H. J. Heinz Company

TWO TECHNICAL DEVELOPMENTS in 1959 attracted much attention in the food industry.

One of these is the elaboration of continuous processing in the handling of meat, vegetables and starches. New developments in continuous processing of these foods have led toward greater improvement in quality and, at the same time, have brought about cost reductions.

As techniques continue to develop in the food processing field, the continuous process must be given major attention. To next page

Focus on Technical Problems for '60

Additives • Packaging

The other outstanding development in 1959 was the successful use of a screw cap on baby food jars. This has attracted tremendous attention on the part of the food manufacturer and the consumer.

It has been favorably accepted in more homes and by more people than any other package change that has taken place in years. The result of surveys among mothers and consumers for the last 25 years has regularly indicated that 82 to 85 per cent of those handling hermetically sealed jars prefer a screw cap.

Looking ahead to 1960 we see competition becoming more intense in new product development as well as food improvement. A successful food operation must progress at a faster rate of increase than the population. Since the per capita consumption of food based on physical volume (net weight) is quite constant, the extra sales can only come from upgraded foods which command a higher price, or at the expense of competitive products.

Competitive programs for new and improved products and packages have worked disaster on many well established food items that have been the "bread and butter" items for well established food manufacturers. Progress and success therefore centers around a strong, active merchandising-marketing program on new and improved products. The public has come to consider such programs as typical of the food industry. •

R. K. PEDERSEN
Director, Research
Star-Kist Foods, Inc.

1959 SAW A LARGE INCREASE on the part of both the fresh and frozen segments of the fish industries in voluntarily adopting Federal grade standards for rating their product.

To maintain fishery products as part of the American diet, this quality approach must be continued in 1960 and extended to all operations — from the catch on through to ultimate consumer distribution. Furthermore, it must be extended to all types of fish products whether canned, frozen or fresh.

Combined with quality improvement programs, should be a continuation of nutritional research for elements distinct to fish products.

In 1959, the Hormel Institute demonstrated that unsaturated fats, contained in many fish products, may be instrumental in lowering blood cholesterol. If this proves to be a real health advantage, it would be an important factor in promoting greater consumption of the industry's products. •

DR. WALLACE R. ROY
Vice President, Technical Services
Minute Maid Corporation

IN THE FROZEN citrus concentrate industry during 1959, perhaps the most outstanding strides in improvement in processing procedures have been the elimination of the "hard squeeze" and widespread adoption by a large number of processors of recovery of orange juice by aqueous extraction of the pulp.

During the year, also, small quantities of new frozen concentrated orange juice have appeared in test markets. This product was prepared by newly developed concentrating procedures which yield a fuller flavor, and the reception by the public in the test markets has been quite favorable.

In 1960, the test markets will be expanded as production permits.

One of the major problems that continues to plague the entire frozen food industry, of which the frozen citrus concentrate industry is no exception, is that of temperature abuse in handling and distribution.

This abuse occurs all too frequently, and results in varying degrees of physical and organoleptic degradation of the products.

While considerable progress has been made in the technology of "building in" better stability during processing, it is still imperative that frozen products be protected by being maintained at 0°F to insure optimum stability and flavor at the consumer level. •

K. M. STRAUSS
Vice President for Production
Pabst Brewing Company

TWO OUTSTANDING "technical" events for the brewing industry in the United States in 1959 have been:

1. The establishment of a four-year college course in brewing technology at the University of California at Davis.

2. The announcement by at least one of the recognized brewing schools in this country that henceforth its course in brewing will be open only to men with a degree in one of the applicable sciences (rather than high school graduates).

The better the technical personnel is prepared entering our industry, the greater will be our future progress. This is why I am enthusiastic about these new educational programs and consider them outstanding "technical" events.

Scientists, technologists and engineers in the industry face the challenge of producing an even better product in the most acceptable package more economically.

The scientist is called upon to provide improved raw materials and additional methods of testing both for raw materials and product control. The technologists are busy developing methods for continuous brewing to replace the batch method. To name only a couple of the items, they are searching for ways to further improve the stability of the product and they are devising methods for improved processing of bulk beer. The engineers are introduc-

ing even higher speed filling lines, as well as improved packaging and materials handling equipment.

Progress is being made on all three fronts as evidenced by:

1. The greatly improved analytical methods for the evaluation of hops and the determination of hop values in beer, which are just beginning to be used widely.

2. Published reports indicating that continuous brewing has been perfected on a laboratory scale and is now being translated into the pilot plant stage.

3. The very fine array of new and improved equipment on display at the International Brewing Industry Exposition in Cleveland last September. •

DR. GEORGE GARNATZ

Director
The Kroger Food Foundation

FOR 1960, CERTAINLY there are going to be many technical problems to solve stemming from the Food Additives Amendment with special emphasis on packaging, as well as in connection with certified food colors.

A great deal of effort will be expended on increasing food processing efficiencies to offset mounting costs. Continued progress toward automation and continuous processing will be made.

More and more consumer testing will be utilized in product development and more convenience foods are destined to make their appearance in 1960. Better handling of frozen foods will receive much attention.

1959, in the cereal processing industries at least, is noteworthy for the progress realized in bulk handling of flour and other ingredients, the spread of continuous processing of bread and the interest in the application of air classification in connection with the milling of flour. •

R. B. WAKEFIELD

Director
Research and Quality Control
Gerber Products Company

GREAT STRIDES WERE MADE during 1959 in the area of agricultural research. One development in particular is worth noting.

For years attempts have been made, without too much success, to develop apricot culture east of the Mississippi. At present, all commercial growing of apricots is confined to the western tier of states, with the bulk in California.

During the past decade, efforts have been intensified to develop new varieties suited to the environment of the East. In 1959, enough results were obtained from wide spread commercial planting to indicate that there is a reasonable expectation that we can look forward to large volume commercial production of apricots in the East.

Looking to 1960, the full impact of the Food Additives Amendment will be felt and the food industries will have to learn to live with it. •

HANS SCHMELZER

Chief Engineer and Director of Engineering
General Mills, Inc.

MODERNIZATION of techniques and facilities represents both the outstanding development of recent years and the major remaining problem in the milling industry.

Today, the per capita consumption of flour is still moving downward. Population growth has kept total consumption fairly constant. If our industry is to progress, however, it must share at least proportionately in the progress of the nation.

While effective education, advertising and selling can play a key role in achieving this share, telling and selling alone are not enough. Milling techniques must be improved. The nutritional balance of the products of milling must be even further enhanced. Costs of production and distribution must be reduced. Outmoded plants and equipment must be replaced.

These steps are not easy. Modernization of milling facilities calls for heavy capital investment. To make such an investment in the midst of a revolution in milling methods calls for restraint and courage.

In addition, the constant need for normal production necessarily slows progress in remodeling and re-equipping.

There was never a greater challenge to the scientific skill, ingenuity and resourcefulness of the milling industry. It is a challenge of national importance, for it affects not one industry alone, but a major part of the country's agricultural economy. •

NEXT MONTH . . .

Top food industry executives view FDA's policy on identity standards

Converts Waste Disposal Problem Into Profitable By-product Operation

By delaying undesirable changes in waste effluent, processor is able to develop a usable by-product

THE Adam Scheidt Brewing Company, Norristown, Pa., was faced with a serious waste disposal problem. City authorities threatened to legally enjoin the brewery against further use of its sewage system.

Authorities claimed the system could not cope with the increasing amount of effluent dumped by the brewery into an already over-taxed system.

After months of continuing failure with lime treatments, filtration and aeration systems, sludge forming catalysts and a great variety of chemicals, Scheidt Brewery sought bids for construction of its own activated sludge system.

The lowest bid called for construction costs of $1,297,000, with annual costs of $154,000.

These figures are to be contrasted to construction costs of $35,000 for a system using Cloroben. Added to this is the price of 53 ounces of Cloroben used daily in the system which totals only $250 annually.

Not only were initial costs an important factor, but the use of Cloroben enabled Scheidt Brewery to develop a profitable by-product operation.

Delays undesirable changes

A series of exacting tests with Cloroben demonstrated that it effectively delayed undesirable changes (rancidity and putrefaction) in waste effluent.

Capitalizing on this observation, Scheidt Brewery went about recovering valuable nutrients, formerly discharged in the waste, for animal feeds. A further plus factor obtained with the new system is the improved quality of the regular dried spent grain.

A small amount of Cloroben is added to the protein sludge collected from the hot wort tank, along with drainage from the Lauter tubs in the brewhouse (see diagram). These fluids are used in place of water to transport spent grains into the grain drying plant. Cloroben maintains both the spent grains and the sludge without any decomposition whatsoever.

Increases Nutritional Value

Since the spent grain is immersed in a sludge containing a high degree of trub sediment, it accumulates a coating of protein while it is being pumped to the grain press. This substantially increases its nutritional value as a fodder after it has been dried.

Guaranteed analysis of dried brewers grain, adopted by the US Government several years ago, is set at a standard of 24% protein, 6% fat and maximum fiber content of 17%.

The average dried brewers grain produced at the Scheidt Brewing Company with new process contains 27% protein, 6.7% fat and substantially less than 15% fiber content. Major feeders of cattle in the Pennsylvania-New Jersey area are specifically requesting fodder produced at Scheidt Brewery.

WHAT IS CLOROBEN?

Cloroben is a special formulation of chlorinated hydrocarbons and dispersing agents. Technical orthodichlorobenzene makes up 66 per cent of the formula.

Being a relatively volatile liquid, it diminishes by vaporization from the waste liquor or slurries to which it has been added. In the brewery by-product operation, described in the adjoining columns, it is removed from spent grain along with water in the drum drying operation.

Cloroben functions in two important ways. First, it inhibits growth of anaerobic, sulfide-producing bacteria — the kind that produce offensive off-odors.

It does so by penetrating the cell membranes of these odor-causing bacteria. It thus allows desirable aerobic bacteria to take over and reduces the BOD (biochemical oxygen demand) naturally.

Second, because of its unusual solvent qualities, Cloroben acts to emulsify or liquefy grease and fat. The amount used may be as much as 50 parts per million — more or less — depending upon the amount of accumulation.

As little as two to five parts per million will stop accumulation on a preventive maintenance basis. (Cloroben is a product of Cloroben Chemical Corporation, 115 Jacobus Ave., South Kearny, New Jersey.)

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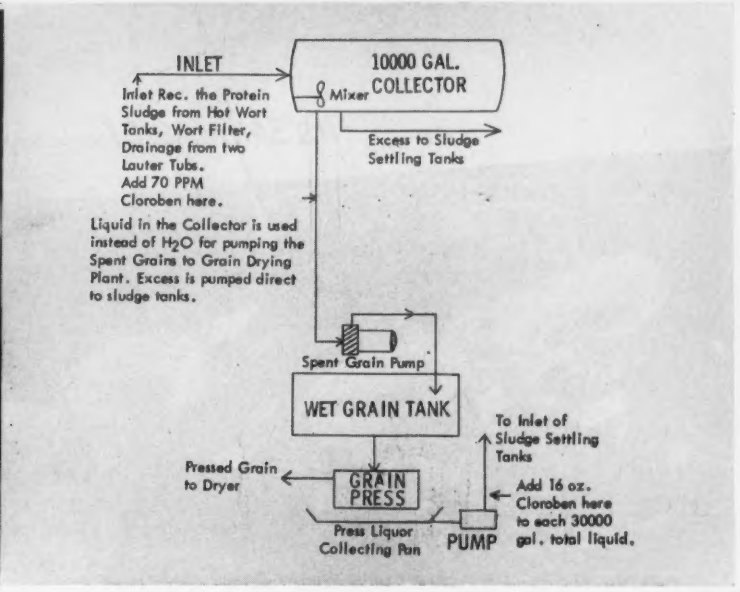

INLET
10000 GAL. COLLECTOR
Mixer
Inlet Rec. the Protein Sludge from Hot Wort Tanks, Wort Filter, Drainage from two Lauter Tubs. Add 70 PPM Cloroben here.
Excess to Sludge Settling Tanks
Liquid in the Collector is used instead of H_2O for pumping the Spent Grains to Grain Drying Plant. Excess is pumped direct to sludge tanks.
Spent Grain Pump
WET GRAIN TANK
To Inlet of Sludge Settling Tanks
Pressed Grain to Dryer
GRAIN PRESS
Add 16 oz. Cloroben here to each 30000 gal. total liquid.
Press Liquor Collecting Pan
PUMP

View of collector tank where a small amount of Cloroben is added to protein sludge collected along with drainage from Lauter tubs in the brewhouse. Diagram shows how this liquid is used in place of water to carry spent grains into the grain drying plant

Since Cloroben is highly volatile, all of the chemical is vaporized out of the dried grain as a result of the heat required for drying purposes.

The second stage in the waste conversion process is concerned with salvaging the sludge in the press liquor obtained after the spent grain passes through the grain press. This liquor is collected in the press pan and automatically pumped to three sludge settling tanks designed by engineers at Scheidt Brewery (see diagram). Each tank has a capacity of 15,600 gallons.

Since little, if any, Cloroben remains in press liquor at this point, additional Cloroben is added (about 16 ounces to 15,000 gallons of fluid) to further delay decomposition.

Each tank contains a giant metal tube with a circular fin base intended to prevent sludge from bubbling up into clear liquid residue that rises to top as tank is filled. A flexible copper hose, attached to a stainless steel float, syphons off liquid residues as sludge settles and liquid clears.

When all that remains in tanks is the sludge, collected at the bottom beneath the circular fin of the tube, the tank is refilled with additional press liquor. This reduces the Cloroben solution to a maximum of 16 ounces per 30,000 gallons of fluid.

Premium high-protein food

Again the sludge is permitted to settle and the clearing water is drained off. The sludge, resembling a watery mash, is then removed from the tank and sold to neighboring piggeries as premium high-protein food.

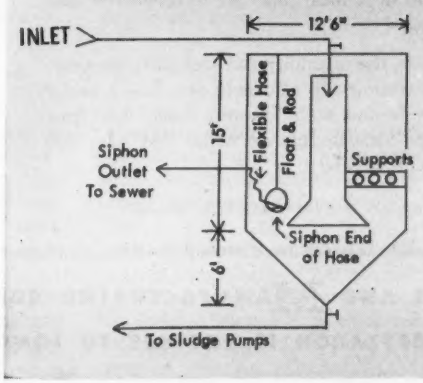
It has been found, according to feeders, that hogs raised on this food are far heavier, producing substantially increased slaughterhouse weight, with a marked reduction in light fat and bone.

A definite indication of the superiority of this food can be found in the fact that neighboring pig farmers using this sludge are securing higher prices for their hogs than the Chicago market price for comparable grades.

Repeated tests show only 7/10 of one part per million of Cloroben remaining in this hog mash. USDA reports that no sign of toxicity was found when Cloroben was fed to sheep and cattle at the level of 1333 parts per million.

Liquid residue from the sludge tanks, which is almost entirely clear in appearance and low in BOD, can now be emptied into Norristown's sewage system at rate of 30 to 40 gallons per minute without affecting the normal operation of the municipal waste disposal plant in any way.

END



Three sludge settling tanks, designed by engineers at Adam Scheidt Brewery, are used to salvage sludge in press liquor obtained after spent grain passes through the grain press. Diagram of one tank shows how they all operate

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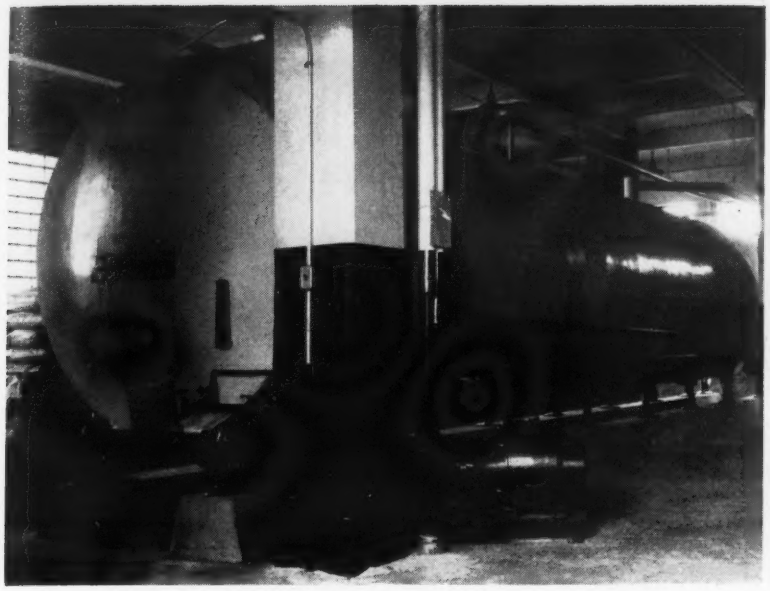
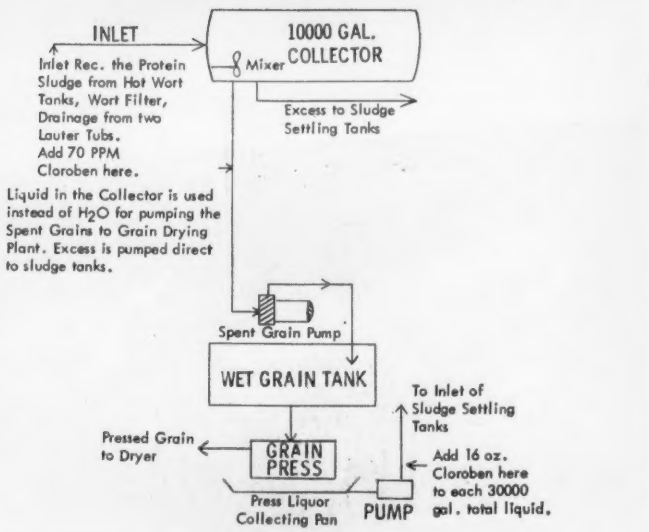
6155 on Reader Service Slip




INLET
10000 GAL. COLLECTOR
Mixer
Inlet Rec. the Protein Sludge from Hot Wort Tanks, Wort Filter, Drainage from two Lauter Tubs. Add 70 PPM Cloroben here.
Excess to Sludge Settling Tanks
Liquid in the Collector is used instead of H_2O for pumping the Spent Grains to Grain Drying Plant. Excess is pumped direct to sludge tanks.
Spent Grain Pump
WET GRAIN TANK
To Inlet of Sludge Settling Tanks
Pressed Grain to Dryer
GRAIN PRESS
Add 16 oz. Cloroben here to each 30000 gal. total liquid.
Press Liquor Collecting Pan
PUMP

View of collector tank where a small amount of Cloroben is added to protein sludge collected along with drainage from Lauter tubs in the brewhouse. Diagram shows how this liquid is used in place of water to carry spent grains into the grain drying plant

Since Cloroben is highly volatile, all of the chemical is vaporized out of the dried grain as a result of the heat required for drying purposes.

The second stage in the waste conversion process is concerned with salvaging the sludge in the press liquor obtained after the spent grain passes through the grain press. This liquor is collected in the press pan and automatically pumped to three sludge settling tanks designed by engineers at Scheidt Brewery (see diagram). Each tank has a capacity of 15,600 gallons.

Since little, if any, Cloroben remains in press liquor at this point, additional Cloroben is added (about 16 ounces to 15,000 gallons of fluid) to further delay decomposition.

Each tank contains a giant metal tube with a circular fin base intended to prevent sludge from bubbling up into clear liquid residue that rises to top as tank is filled. A flexible copper hose, attached to a stainless steel float, syphons off liquid residues as sludge settles and liquid clears.

When all that remains in tanks is the sludge, collected at the bottom beneath the circular fin of the tube, the tank is refilled with additional press liquor. This reduces the Cloroben solution to a maximum of 16 ounces per 30,000 gallons of fluid.

Premium high-protein food

Again the sludge is permitted to settle and the clearing water is drained off. The sludge, resembling a watery mash, is then removed from the tank and sold to neighboring piggeries as premium high-protein food.

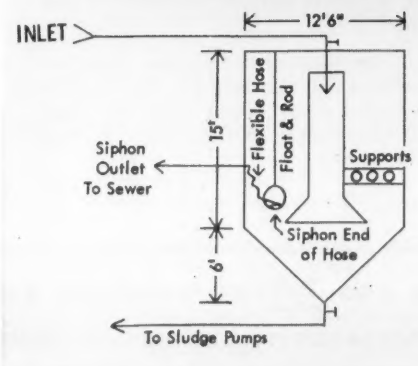
It has been found, according to feeders, that hogs raised on this food are far heavier, producing substantially increased slaughterhouse weight, with a marked reduction in light fat and bone.

A definite indication of the superiority of this food can be found in the fact that neighboring pig farmers using this sludge are securing higher prices for their hogs than the Chicago market price for comparable grades.

Repeated tests show only 7/10 of one part per million of Cloroben remaining in this hog mash. USDA reports that no sign of toxicity was found when Cloroben was fed to sheep and cattle at the level of 1333 parts per million.

Liquid residue from the sludge tanks, which is almost entirely clear in appearance and low in BOD, can now be emptied into Norristown's sewage system at rate of 30 to 40 gallons per minute without affecting the normal operation of the municipal waste disposal plant in any way.

END



Three sludge settling tanks, designed by engineers at Adam Scheidt Brewery, are used to salvage sludge in press liquor obtained after spent grain passes through the grain press. Diagram of one tank shows how they all operate

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TAPEnology streamlines bag inventories with high-speed custom labeling!

Now California's Sunsweet Growers use *one* basic pre-printed film as bag stock for a wide variety of packaged fruits. Printed "SCOTCH" Brand Cellophane Tape lets them change a pack label just by changing the tape rolls.

Basic film stock is pre-printed with brand name and slogan only; bags are individualized for each specific product with form-cut strips of the tape printed *on the adhesive side* and applied to the inside surface of the film stock. Entire operation is automatic at high speed using a custom-built applicator designed with the help of a local tape printer-converter and 3M's Customer Engineering Service.

What do you pack? Chances are, the ingenuity and technical resourcefulness used in this Sunsweet operation can also help you find a better way to package—at higher speeds and with lowered costs. Ask your regular "SCOTCH" Brand Tape Distributor, or write: 3M Co., 900 Bush Ave., St. Paul 6, Minn., Dept. IAD-10.

When tape costs so little, why take less than "SCOTCH" Brand?

"SCOTCH" is a registered trademark for the pressure-sensitive adhesive tapes of 3M Co., St. Paul 6, Minn. Export: 99 Park Ave., New York 16. Canada: London, Ontario.

MINNESOTA MINING AND MANUFACTURING COMPANY
...WHERE RESEARCH IS THE KEY TO TOMORROW

3M COMPANY

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Weed control in spinach

A report of studies made with various chemicals

Results of studies on the use of chemical weed control in growing spinach are covered in 7-page progress report (Processed Series P-330) from Oklahoma State University Experiment Station, Stillwater, Okla.

Tests were conducted in the Arkansas River Valley in Eastern Oklahoma, an area which extends throughout most of the valley from Tulsa to the Arkansas state line.

Spinach, the major vegetable crop grown in this area, is often contaminated by weeds and grass. At times, they render the crop unfit for harvest.

Hand labor, which is more expensive, is often required in the more weedy fields to harvest selectively rather than the use of less expensive conventional machine harvesters. Effective weed control methods are necessary in order to better utilize machine harvesters.

After trying several chemicals, best weed control results were experienced with CEDC, applied at three pounds per acre. Check plots without treatment had produced 12.91 tons of spinach with 1261 pounds of weeds.

Treatment with CEDC, however, resulted in 15.01 tons of spinach and only 334 pounds of weeds. Results of the use of the several chemicals are compared in table form in the progress report.

Report and studies were prepared by W. R. Kays and Charles Galeotti, Department of Horticulture, Oklahoma State University.

(CEDC chemical is a product of Monsanto Chemical Co., St. Louis, Mo.)

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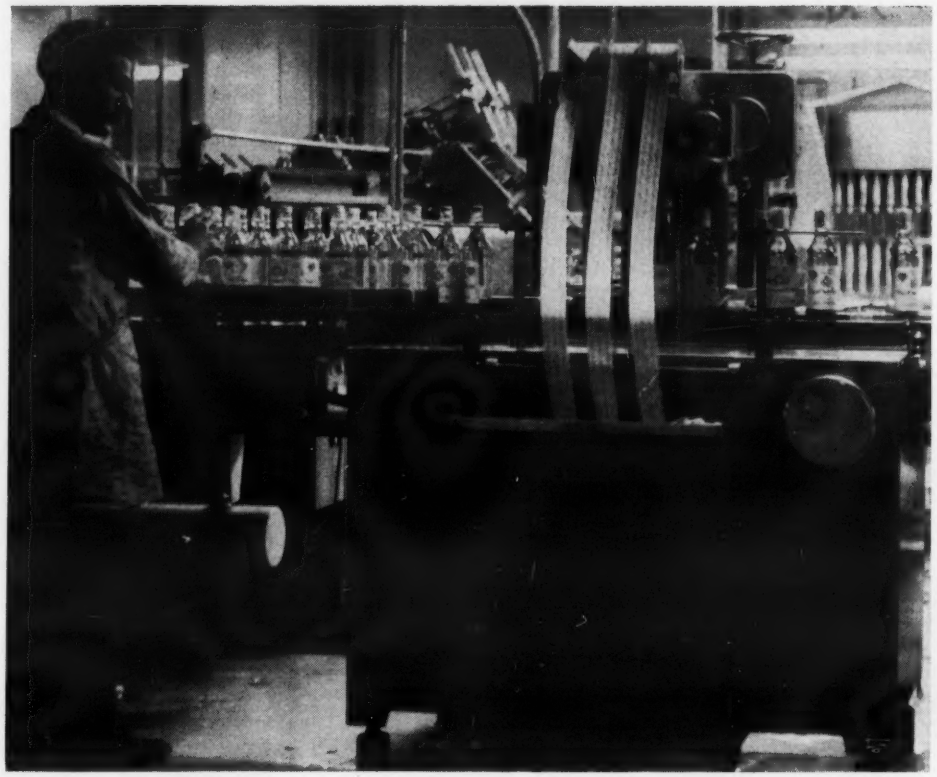
HELP YOURSELF . . . .
For a quick reference to new technical literature available this month, see the classified listing on page 101.



Mandrels are inserted in tube end. Jaws on machine grasp floating sleeve (shown just below thumb) and pull down a measured amount of band onto bottle

Changeover is easy. For new band length or diameter, a new mandrel is inserted into end of roll-stock of proper size. Stroke of mandrel assembly is changed by hand wheels to accommodate new height

Cellubands from roll stock

Automatic applier pays for itself in less than year at Italian Swiss Colony

JOSEPH S. VERCELLI, Plant Manager
Italian Swiss Colony
as reported by **KARL ROBE**

Problem: How to automate the neck-banding "bottleneck" on otherwise high-speed wine-filling-labeling lines? This was the problem at Italian Swiss Colony, where from one to three women per line were needed to apply pre-cut neckbands manually after bottles were filled and capped.

Bands were taken directly from special storage solution, then manually opened and placed loosely over cap and neck of bottle. (As band dries, it shrinks to form tamper-proof protector.)

Solution: Printed cellulose neckbands now are immersed in solution in flattened rolls. On each of the eight lines, a specially designed machine opens end of roll, pulls this end over top and neck of bottle, then cuts — all automatically.

How banders work: Rolls of bands (containing 450 to 600 meters of roll stock) are placed in compartments of a wheeled storage tank containing a special wetting solution.

Tube material from each roll is threaded over a pulley (see photo) then directed downward. A floating mandrel (detail photo) is inserted upward into the tube until end of mandrel is flush with end of tube.

Alignment guides on either side hold mandrel and tube in alignment.

Complete mandrel assembly lowers so that the end of mandrel contacts the top of the capped bottle (which has been correctly positioned by indexing guides on conveyor).

The bottle, in effect, operates as a stop to the downward thrust of the mandrel. The cellulose tube, however, is clamped to a sliding sleeve

(Continued on next page)

AIRCO GASES

(NITROGEN — CARBON DIOXIDE — ARGON — NITROUS OXIDE)

keep foods tasty - lengthen shelf life

If your food product is frozen or fresh, dried or powdered, it will taste better, look better, last longer and *sell easier* if it is packed with an Airco inert gas.

Products such as sliced cheese, luncheon meats, nuts, instant potatoes, soup mixes, powdered milk, fresh or frozen fruits and vegetables, packed in flexible film, benefit greatly if they are "blanketed" with an inert gas or mixtures of such gases.

Vacuum and inert gas blanketing prevents oxidative discoloration and quality loss — preserves inherent good flavor and color — and most important, lengthens product shelf life. In new flexible-packed frozen foods, Airco gases help prevent deterioration and costly "freezer burn."

And for products packaged under pressure, Airco propellants provide the proper push at lowest cost.

See an Airco technical representative soon for the gas best suited for your use. As a start, why not send for the free informative brochures listed in the coupon below — they're yours for the asking, without obligation.

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1400 East Washington Avenue, Madison 10, Wisconsin

Please send, without obligation, the material requested below:

- ☐ "NEW OPPORTUNITIES FOR MORE PROFITABLE PACKAGING"
- ☐ "FACTS ON GASES USED FOR FOOD PRODUCTS"
- ☐ "TECHNICAL INFORMATION — Gas Propellants for Pressurized Packaging of Foods and Other Products"
- ☐ "NITROUS OXIDE AND 'FREON C318' - as propellants for aerosol food products"

Name.....

Title.....

Company.....

Address.....

City.....Zone.....State.....

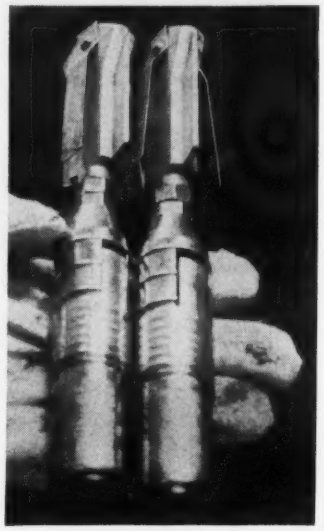
6158 on Reader Service Slip.

(*Continued from preceding page*)

section of the mandrel by an exterior holding jaw.

As mandrel stops against top of bottle, the clamped sleeve section continues downward, pulling a measured length of cellulose tube downward.

This tube section slides down over bottlecap a prescribed distance, and is cut off by an oscillating knife at the point between bottom of mandrel and top of bottle.



Tubes are fed to machine from roll stock in compartments in storage tank. Tank is on wheels for easy replenishment

The sliding sleeve is spring-loaded and snaps back into place as clamping jaws release and mandrel assembly rises to complete the cycle.

Two expanding spring sheaves at top of mandrel press against inside of tube, preventing tube from retracting as the sleeve retracts.

Indexing equipment is available to cut off bands at specific points on the design. At Italian Swiss Colony, the cellulose band design is a staggered repetitive pattern, so that cut-off indexing is eliminated for simplicity of operation.

Two models of the bander are used at Italian Swiss Colony: a three-mandrel model for speeds up to 250 quart bottles per min, and a one-mandrel for the slower gal and half-gal lines. Latter operates at up to 80 bottles per min.

Results: Based on full year operation, the automatic band machines on high volume lines will pay off their investment in nine months or less.

Savings on bands cut from continuous rolls is 30 to 40 cents per thousand bands. Savings on material alone amounts to more than $4000 per year. Expense of up to 2½ employees per line is saved.

Storage space is saved. Roll stock occupies an estimated 50 per cent less space than precut bands.

Being completely automatic, machine is not limited to speed of operator. One operator can oversee three machines, keep them loaded with roll stock and easily make changeovers.

● Automatic "Cellubander" neck-banding machines in use at Italian Swiss Colony were manufactured by John Burton Machine Corporation, 1600 West St., Concord, Calif.
6159 on Reader Service Slip.

● As a service to its readers, FOOD PROCESSING inquired of a number of suppliers of pre-cut cellulose neckbands as to whether they also supply cellubands in roll form. The following companies replied that they supply bands in this form:

American Viscose Corporation, Film Division, 1617 Penn Blvd., Philadelphia 3, Pa.
6160 on Reader Service Slip.

Armstrong Cork Company, Lancaster, Pa.
6161 on Reader Service Slip.

The Celon Company, Medical Arts Bldg., Muscatine, Ia.
6162 on Reader Service Slip.

E. I. du Pont de Nemours & Company, Inc., Wilmington 98, Delaware.)
6163 on Reader Service Slip.

See this month's "FP Hall of Fame Cartoon" on page 103, and then vote for large reproduction of your favorite on the Reader Service Slip.

Tom Huston Peanut Co., Columbus, Georgia, reports:

Bulk Sugar Savings Start with 2 Permaglas®

Mechanized Bulk Storage Structures

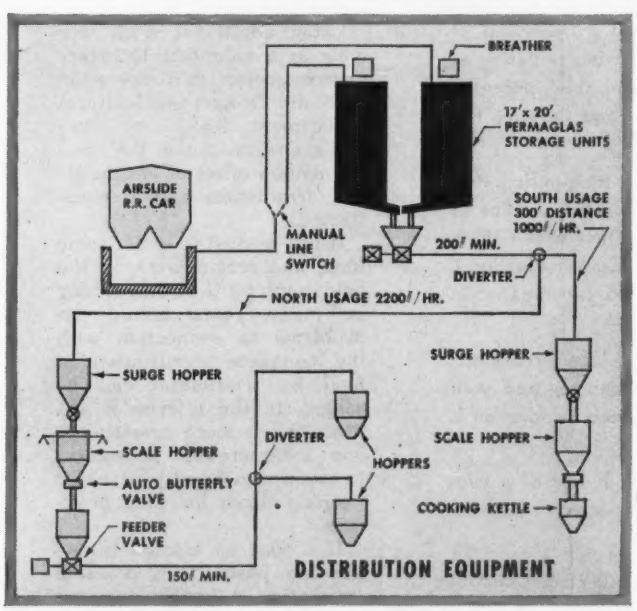
✓ *$21,000 inplant saving in sugar handling for one year*

✓ *77% less storage space than for bags*

Two 17′ x 20′ *Permaglas* Bulk Storage Units, equipped with A. O. Smith's exclusive mechanical "sweep-arm" bottom unloader, and an automatic conveying system has replaced the out-dated, expensive method used for handling and storing sugar at the Tom Huston Peanut Company's plant in Columbus, Georgia. The automatic system conveys the bulk sugar efficiently, rapidly and directly into production processing. Here are the cost-saving advantages realized with the *Permaglas* Units:

1. Elimination of inplant handling and storing of bagged sugar, resulting in savings of $21,000 per year.

2. Sugar stored in bags required 3,320 sq. ft. of space. With bulk sugar storage only 760 sq. ft. of this space is necessary. Additional cost savings realized are: more accurate weighing of sugar into premelt kettles . . . utmost sanitation in automatic system because sugar is not exposed to air until it is deposited into cooking kettles . . . no messy bags to contend with . . . safe, clean, sanitary storage of bulk sugar in the *Permaglas* Units rather than in the warehouse. Moreover, because *Permaglas* Structures are glass-lined inside and out—sugar is protected from contamination.



Bulk sugar is pneumatically transported from "air-slide" railroad cars into two 17′ x 20′ *Permaglas* Mechanized Storage Units at the rate of 30,000 lbs. per hour. From the storage tanks the sugar is automatically fed into two sets of surge hoppers. From here the bulk sugar goes directly into cooking kettles for processing. This automatic distribution system is the answer to high-cost inplant handling and storing of bulk sugar.

For complete details on *Permaglas* Mechanized Bulk Storage Units fill in and mail coupon.

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KANKAKEE, ILLINOIS
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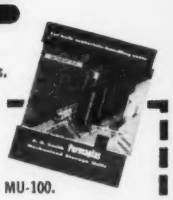

A. O. SMITH CORPORATION
Permaglas Storage Units, Dept. FP-10
Kankakee, Illinois
Send me free Permaglas Mechanized Storage Unit Bulletin MU-100.

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Company.....
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Radiation Reappraisal

by Food Industry Research Experts

Two years ago, FOOD PROCESSING presented a "roundup" of expert opinion on the then current status of ionizing radiation as a food preservative technique, and its probable potential ("Radiation Preservation — an Appraisal by Food Industry Research Experts," FP, July, August, October 1957).

In light of the Army's abrupt cancellation of the long-anticipated Stockton, Calif., pilot plant for commercial production studies on irradiated foods, (FOOD PROCESSING, December 1959, "Army Research and Development's Million-Dollar Blunder"), the editors went back to the same experts who participated in the original "roundup" and asked this question —

"In light of the Army's return to emphasis on 'basic research,' what is your opinion, based on your own researches and your general knowledge of the field, as to where food irradiation is headed, and when it will arrive there?"

Following are some of the replies — in this first part of a two-part article on a subject that has important long-term implications for the entire food industry.

Additional replies to FOOD PROCESSING's inquiry will appear in the February issue.

The Editors

Chas. Pfizer & Co., Inc.

Brooklyn 6, N. Y.

We are in general agreement with the opinions set forth in your December article ("Army Research and Development's Million-Dollar Blunder").

As you are no doubt aware, we sponsored research work at the American Meat Institute Foundation covering the combined use of antibiotics and irradiation. From this work by Niven et al. it appeared that unexpectedly large gains in effectiveness could be made by the combined use of an antimycotic agent (sorbic acid), an antibiotic (oxytetracycline) and irradiation. In general the Gram-positive bacteria are most resistant to destruction by radiation, but these are the organisms which are most readily controlled by antibiotics.

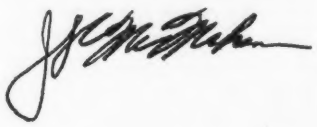
Later, additional work was done in a volunteer Quartermaster project in cooperation with the Oregon Agricultural Experiment Station at Corvallis, Oregon. Again the complementary effect of antibiotics and irradiation was demonstrated.

It has seemed to us for some time, and recent work in the field confirms this, that it may be many years before the problems in connection with the complete sterilization of food by irradiation can be solved. In the interim it appears much more practical to use antimicrobial substances to attain significantly increased keeping times for food products.

If a food so treated is exposed to pasteurizing levels of irradiation, a further increase in preservative action is obtained. Although the use of antimicrobial agents and pasteurizing levels of irradiation will not produce foods which will keep indefinitely, the shelf life which could be obtained is far in excess of that of foods in normal distribution channels.

This increased time available for distribution should not only be helpful in normal distribution channels but should be of enormous benefit to the Armed Forces in supplying outlying bases in peace time as well as under war conditions.

Again thank you for the opportunity of commenting, and we hope that your editorial will encourage continuing support for the fundamental research which is so necessary in this new field of food processing.



J. R. McMAHAN
Scientific Asst. to The Director

John Morrell & Co.

Ottumwa, Iowa

We are still actively engaged in research on radiation processing of meat and meat products. Our efforts in the last year have been diverted from research on products to bacteriology problems associated with spore resistance to destruction by ionizing radiations.

In order for a process to be adopted by industry it has to meet either one or two requirements and preferably both. Either the process has to make an existing product better or the cost of the process has to lower the cost of an existing product. So far we have no evidence that radiation can fulfill either of these objectives.

It is possible to develop new products utilizing radiation processing, but the off flavor and odor problems at the

present time with meat products make this approach seem unlikely. Approval to use this type of treatment on meats has not been given by the Meat Inspection Division of the U.S. Department of Agriculture.

We do not see any immediate application of radiation processing for our industry. The progress made on basic research will of course determine future feasibility of radiation processing.

W. L. Brown

W. L. BROWN
Asst. Director of Product & Technical Research

DCA Food Industries, Inc.

New York 18, N. Y.

First, I cannot qualify as an expert in radiation preservation either in terms of any original research being done or in terms of being current and familiar with the work that has been done by others.

The opinion that I had expressed some time ago, namely that radiation preservation inherently held no promise in the preservation of baked foods because of the nature of the staling mechanism, still applies.

However, as a food technologist, I cannot foresee, within the reasonable future, commercial application for radiation pasteurized foods. Nor can I see any reasonably close outlook for complete sterilization.

The reason for making this statement is the fact that radiation sterilization must produce reactions in foods. The end products of these reactions

(*Continued on next page*)

1885–1960 75th Anniversary

An Anniversary... and a Promise

For 75 years this company has been building boilers.

We are grateful for the skills and sense of responsibility of our engineers and craftsmen, working in the solid tradition of one of America's first metalworking centers. They have met the needs of industry through the years, and developed O&S products to a high degree of reliability and performance.

We don't feel old. We feel younger and more capable than ever, and we make this promise to our friends and customers: We will never rest in our efforts to produce the finest, most advanced boilers and fuel burning systems that it is possible to build.

A. W. Klein
President

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Radiation

(*Continued from preceding page*)

have not yet been identificd in toto, and it may be quite some time before they are.

A heavy program of "treatments and effects" may result in organoleptic acceptibility. However, in my opinion, it is essentially a gamble type of operation, and I am inclined to agree that the only sound way to proceed with this program is through the program of basic research in which the reaction products resulting from radiation sterilization are known, are known minutely, are known in detail, leading perhaps to a more fundamental way of preventing the formation of chronically toxic, acutely toxic, and organoleptically undesirable materials.

One might regard radiation sterilization as a method of producing unknown food additives.

If one were to apply the criteria that must be met before food additives can be placed in foods in order for them to be regarded as safe, then I think the real problems in connection with radiation sterilization, aside from acceptibility, are more evident.

To sum up then, our interest in this activity is minimal until more basic research is done.

Zenas Block

ZENAS BLOCK
Vice President Planning and Research

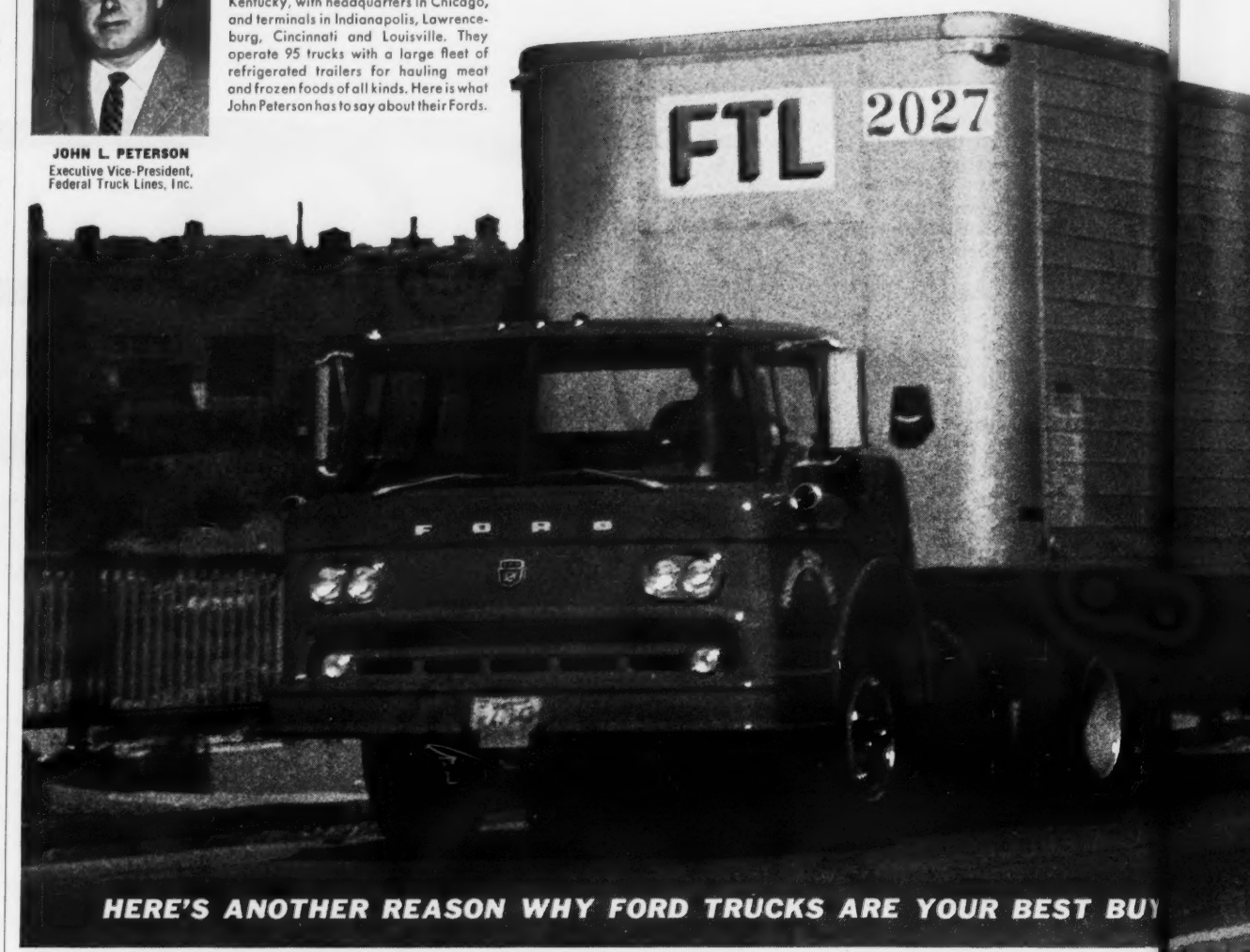
National Dairy Products Corporation

Glenview, Illinois

The problems of radiation side-effects in food, particularly off-flavor, off-odor, and bleaching have always appeared formidable to us. We have followed with interest

JOHN L. PETERSON
Executive Vice-President, Federal Truck Lines, Inc.

A progressive and growing truck line, Federal Truck Lines, Inc., serves the States of Illinois, Indiana, Ohio and Kentucky, with headquarters in Chicago, and terminals in Indianapolis, Lawrenceburg, Cincinnati and Louisville. They operate 95 trucks with a large fleet of refrigerated trailers for hauling meat and frozen foods of all kinds. Here is what John Peterson has to say about their Fords.



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"The shorter length and better weight distribution of Ford C-800 tractors enable us to haul 40-foot trailers and 4,000 lb. more payload legally.

"And the maneuverability and handling ease of these Ford Tilts make them ideal for our city runs in highly congested traffic . . . runs through Chicago, East Chicago, Hammond and Gary where tough start-and-stop driving really tortures trucks. *But how these Fords can take it!* Our shop files are full of typical durability records like this: '55 Ford F-800 tractor running this rugged route for 72,800 miles . . . and no major repairs at all.

"We started using Fords in 1942 and now have 74 in our fleet. They have always been economical to operate with good gas mileage and low maintenance costs. Ford tractor rear ends, transmissions and brake linings have proven to be exceptionally durable in our work. And Fords don't give us any kingpin or bushing problems. The ready availability and the low cost of replacement parts are other important reasons Fords are economical to run.

"We are just putting into service several new Ford C-800 tractors with Transmatic Drive and they look like the perfect job for our type of service."

Big Fords for '60 are built for longer life . . . with Certified Durability

Whatever your job . . . wherever you do it . . . you'll discover just as Mr. Peterson did, that Ford Trucks are the best investment you can make for your transportation dollar.

Certified results of tests conducted by America's leading independent research organization (name available on request) confirm the fact that Ford Super Duties have been refined to make them more durable than ever before. Automatic radiator shutters, improved electric fuel pumps, and redesigned wiring harnesses are typical of the advancements to be found in these units.

Automatic radiator shutters reduced the coolant temperatures recorded in severe mountain road tests from a range of 79° to a 20° range. Engine operation between the temperatures of 167° and 187° means less expansion and contraction, more efficient combustion and better lubrication . . . all of which contribute to longer engine life.

Dynamometer tests showed *no vapor lock* with Ford's submerged-type electric fuel pump at temperatures up to 200°. Incipient vapor lock with mechanical fuel pump resulted in a power loss of 9% under the same conditions. Shaker table tests plus constant exposure to oil, water and heat proved 1960 wiring harness to be *three times longer lived.*

Test results like these plus the experience of satisfied users are important, but that is not all. For 1960, the Super Duty line has been broadened to provide even more flexibility in power train options. Get the facts from your Ford Dealer!

MORE PAYLOAD"

At Federal's dock, a mechanic stands on a special platform built on a Ford F-350 "Utility" Truck to check and start the trailer refrigerator unit. The Ford Tilt Cab tractor, at right, backs its trailer to the dock for unloading. Federal Truck Lines operates 74 Ford Trucks ranging from pickups to C-850 highway tractors.

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . BUILT TO LAST LONGER, TOO!

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the excellent fundamental studies directed toward understanding and controlling these effects. We feel that considerable work will be needed in this area before the pilot plant stage can be reached.

Walter L. Hock

WALTER L. HOCK
Manager, Engineering Laboratory

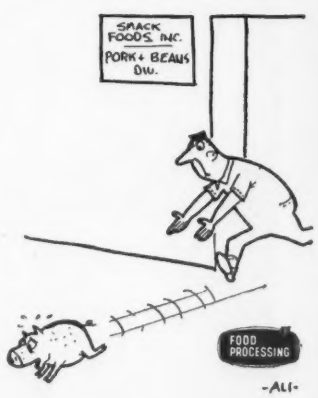
Kwik-Kafe Coffee
Processors of America, Inc.

Hatboro, Pa.

With regard to your request of November 18, for comment and information on our radiation sterilization studies, I wish to advise you that our Company has withdrawn from the Quartermaster Program. The reason for this withdrawal was a recognition by us of the need for much more intensive research into the nature of coffee flavor, before it would be possible to solve the problems engendered by radiation processing of coffee concentrate.

Stanley Segall

STANLEY SEGALL, Ph.D.
Director of Research



Develop method for by-passing bottle handling or on-spot mixing

Draught Dispensing of

Now on tap for use by:

- soda fountains
- vending machines
- households

Syrup and water are mixed continuously, then carbonated, all in correct proportion. Unit needs no refrigeration, has capacity of 450 gal or about 30 tanks/hr. At header leading from mixing unit, six tanks are filled simultaneously

FROM a single pre-mix tank of syrup and carbonated water, over 100 six-oz servings are dispensed. Bulk filling and dispensing consistently duplicate flavor and sparkle of bottled drinks.

Like regular bottled soft drinks, blending and carbonating are done at the bottling plant, where the pre-mixed product is filled directly into stainless steel tanks of about five gallon or 600 oz capacity.

Whether in retail counter-type outlets or in vending machines, the pre-mix tank is connected to a carbon dioxide cylinder. CO_2 cylinder is not required in smaller home units. However, a unit now under development will eliminate need for cylinder. For large volume, several tanks can be connected in series.

Function of carbon dioxide is two-fold: gas keeps carbonation in drink and also acts as propellant. It pushes product from tank, through refrigeration unit to dispensing valve.

Refrigeration unit, depending upon installation, may use ice, ice-water or mechanical cooling.

Dispensing soft drinks with pre-mix offers several advantages. Since one tank of pre-mix replaces over four cases of six-oz bottles, space needed for cases is released. No coolers are needed; no labor for stocking and emptying; no round-up of empties; no bottle loss.

Pre-mix eliminates the guesswork in fountain mixing and does away with gallon syrup jugs.

Under test for the home refrigerator is a 144-oz flask, equivalent to a case of 6-oz bottles. To dispense the drink, the housewife will need only a small length of plastic tubing and a small plastic push-button hand valve.

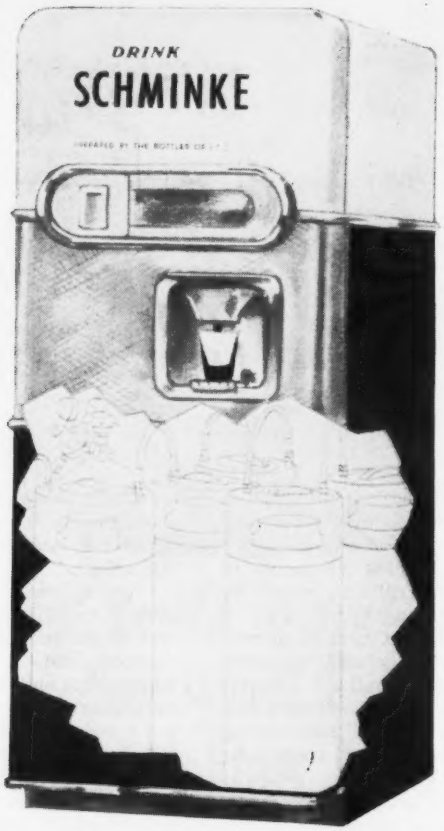
Also under test for home use is a combination three-product dispenser which is designed to use 320-oz flasks. The unit also makes and stores ice cubes and should find application in recreation rooms or rathskellers.

One of the first bottlers to enter the pre-mix field is the Chicago Coca-Cola Bottling Company. At their Jefferson Street plant, pre-mix tanks of Coca Cola and Fanta line of orange, root beer and lemon-lime are filled alongside regular bottling line, see photo to lower left.

At this plant, continuous testing by quality control laboratory guards production. Particularly close control is exercised over the water, which is meticulously filtered.

Syrup is purchased from branch plant and delivered in 54 gal SS drums. For pre-mix filling, syrup is forced from drums by applying pressure of 6 psig with carbon dioxide.

Pre-mix Carbonated Soft Drinks



Soft drinks on draft. All mixing and carbonating has been done at plant in newest development for soft drinks. Largest vending machines can accommodate up to 8 tanks of pre-mix plus cylinder of carbon dioxide. Four-product unit shown (upper left) is capable of dispensing 1000 six-oz cold drinks per hour

Water and syrup lines lead to machine which continuously and automatically mixes liquids and carbonates mixture. Product is now ready for filling and is piped to SS manifold.

Just prior to actual filling, tanks are cleaned. They are washed with 3 per cent hot (130F) caustic soda solution which enters tank through filling valve and dip tube. Cleaning solution is followed by hot water for thorough rinse.

Immediately after cleaning, closures are screwed on tanks and sealed with wire and dated plumb seals.

Besides closures, tanks have two sanitary fittings for filling, dispensing and interconnecting.

Dip-tube extends all the way down to bottom of tank into a little sump. Tube and sump help avoid turbulence in filling, assure complete drainage when tanks are emptied.

In process of filling tanks, first step consists of putting tanks under counter-pressure. Pressure is applied by filtered compressed air or carbon dioxide and is just below pressure of carbon dioxide in drink. Purpose of counter-pressure is to form cushion so that liquid entering tank will not foam or bubble.

Liquid flows from header and as level in tank reaches top, nylon float in a bleeder valve pops up thus signalling operator that tank is full.

After filling, valves are protected by plastic caps which have been sterilized and are color coded according to product. Further identification is made by plastic cards which were sealed to tank by same wire that sealed safety cap.

Tanks have a capacity of 4.75 gal and are made of 304 stainless. They are 9 in. in diameter, stand about 23 in. high and weigh about 11 lb. At present, Chicago Coca-Cola Bottling Company has approximately 2300 of these tanks in circulation.

Filling pre-mix tanks requires less manpower and less equipment than bottling in standard bottles.

Production efficiency at this plant is about 5 per cent higher for pre-mix tanks than for bottling lines, when figured on an equivalent basis of cases per manhour.

(Pre-mix tanks, dispensing equipment and supplementary parts for processing and dispensing are manufactured by The Cornelius Company, 201 Oak St., Anoka, Minn., and many other companies.)
6167 on Reader Service Slip.

(Kold-Flow Redi-Mix unit is a product of the Kol-Flo Kooler Co., Kol-Flo Bldg., Bayonne, N.J.)
6168 on Reader Service Slip.

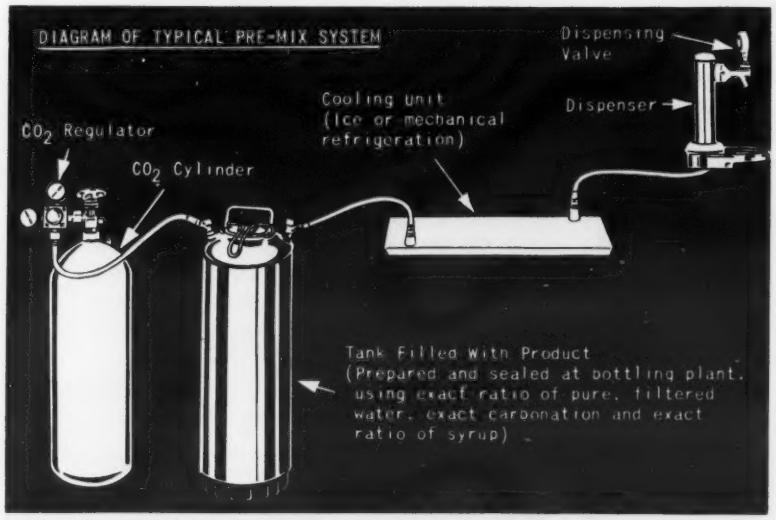


DIAGRAM OF TYPICAL PRE-MIX SYSTEM
Dispensing Valve
Dispenser
Cooling unit (Ice or mechanical refrigeration)
CO_2 Regulator
CO_2 Cylinder
Tank Filled With Product
(Prepared and sealed at bottling plant, using exact ratio of pure, filtered water, exact carbonation and exact ratio of syrup)

Remodeling warehouse for refrigerated storage made easy with 'boards' of foam insulation

To serve 45 stores in 600 sq mi area and to operate on two-day inventory, Safeway changed existing warehouse to modern distribution center in Wichita, Kansas.

For efficient control of relative humidity and temperature almost half of original 50,000 sq ft in warehouse had to be insulated. Remodeling provided freezer room for frozen foods, dairy products cooler, six produce coolers and five banana rooms.

Outside walls of freezers and dairy coolers are insulated with two 4 in. layers of foam insulation; produce coolers with 3 in. layers.

Rooms have free-standing partitions made of two 4 in. layers of insulation built directly on subfloor. Method of construction provides flexibility for later expansion or alterations.

Freezer and cooler floors have 8 in. of insulation sandwiched between 4 in. concrete subfloor and 4 in. concrete wearing floor. Vapor transmission rate of insulation is 1-2 perms and its compressive strength averages 20.8 lb/in. sq. (3000 lb/sq ft).

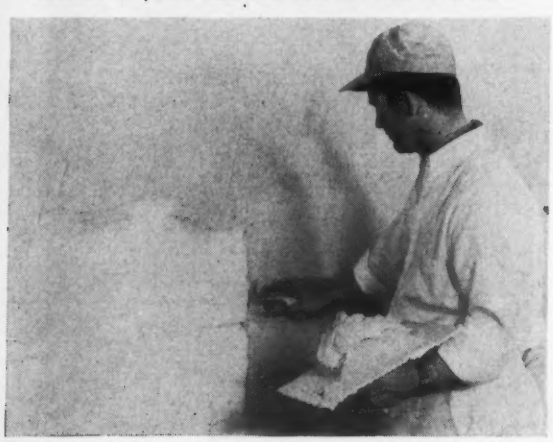
For protection against subsoil freezing*, pipes were laid in sand underneath subfloor for the purpose of circulating anti-freeze.

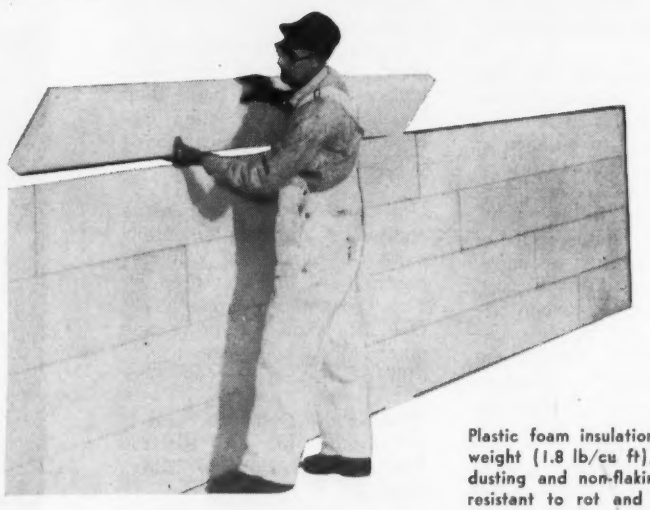
Ceiling is constructed of waterproof plywood; has two 4 in. layers of insulation and is finished with light-weight mineral cement.

Easy-to-handle insulation can be cut with ordinary wood-working tools

*For what can happen to cold-storage floors that are not protected against subsoil freezing, see page 53 of the December issue.

Rooms under refrigeration are insulated with polystyrene foam, bonded with internal-setting asphalt and finished with ½ in. plaster coat. No additional vapor barrier is necessary since non-interconnecting cellular structure of plastic insulation does not swell or soften





Plastic foam insulation used is lightweight (1.8 lb/cu ft), odorless, nondusting and non-flaking. It is highly resistant to rot and fungus growth

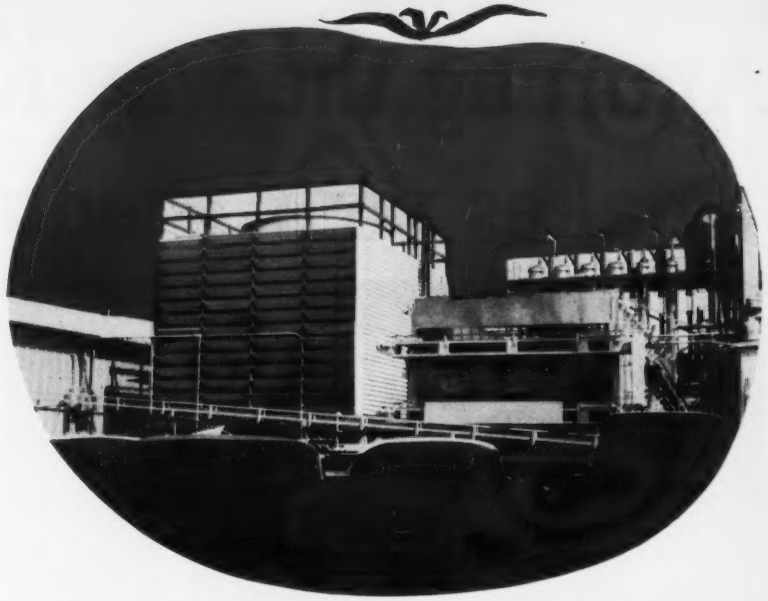
Both coolers and freezers have bi-parting electroglide doors, and freezers have air-curtain installations. Automatically operated doors are opened and closed by pull cords located a few feet from door on each side. Truck operators, by pulling string, can open doors just before reaching them and close doors as soon as trucks clear doorway. Thus, doors are open minimum of time

Automatic cooler doors with air curtains: expedite material handling, stop loss of cold air

Air curtains are installed on inside of cold-room doors. Fan-shaped ducts distribute air completely across doorway so that downward flow effectively blocks entrance of moisture-laden warm air. Shining band of metal around doorway is over-plate for Frostop, an electrical heating cable, which provides additional safety factor against door freezing to frame. Curtains eliminate the need for air lock entries, thus make extra floor space available

("Styrofoam" insulation is a product of The Dow Chemical Company, Midland, Mich.) 6169 on Reader Service Slip.

(Electroglide cooler doors are a product of the Jamison Cold Storage Door Co., 428 Forest Drive, Hagerstown, Md.) 6170 on Reader Service Slip.



Got a "hot tomato" in your plant? Cool it with a

Marley Double-Flow Aquatower®!

The process of removing heat from tomato concentrate is a critical one at this California plant that must operate at peak capacity throughout the limited processing season when the temperature of cooling water can "make or break" the plant's productivity. And, as is so often the case where standards of performance and dependability are exacting, the job was entrusted to a Marley Double-Flow Aquatower.

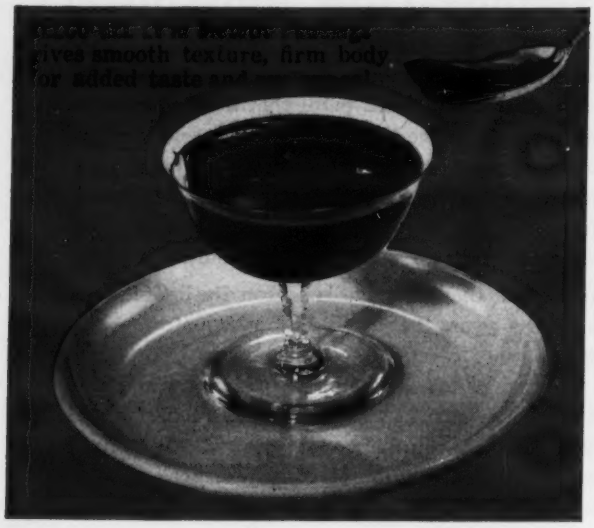
Despite the fact that its usage is seasonally limited to a few months of the year, the Double-Flow Aquatower is a highly profitable piece of equipment. By saving more than 95% of the water that can be wasted in process cooling, it is a self-liquidating investment . . . and once its modest initial cost is amortized, it will return handsome dividends over its long service life. Its contribution to consistent peak production gives it a distinctive value not easily calculated in dollars and cents.

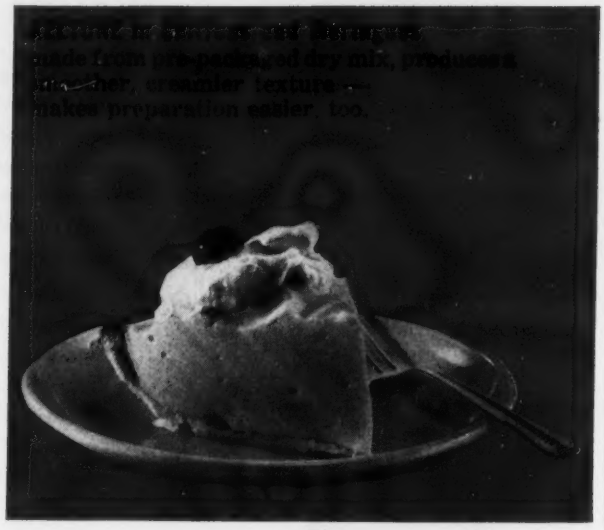
Whether your plant has one "hot tomato," or a series of varied water cooling requirements, Marley offers a Double-Flow Aquatower that will handle the job—dependably, economically and permanently. For information on the wide range of styles and sizes available, call your nearby Marley Engineer or write to

MARLEY **The Marley Company**
Kansas City, Missouri

6171 on Reader Service Slip.

Amazing the way Kelco Algin makes your products better





—and enables you to develop new, improved products, too!

KELCOLOID LVF® KELCO-GEL HV® KELCO-GEL LV® KELTONE® PRODUCTS OF KELCO COMPANY

120 Broadway, New York 5, N. Y • 20 N. Wacker Drive, Chicago 6, Illinois • 530 West Sixth Street, Los Angeles 14, Calif. • Cable Address: Kelcoalgin

6172 on Reader Service Slip.

conventions and exhibits

Jan. 18-23. National Canners Assn., annual meeting (including concurrent Canning Machinery & Supplies Assn. exhibit of canning and freezing machinery, supplies and services), Hotel Americana, Miami Beach, Fla.

Jan. 25-27. National Dairy Council, 45th annual meeting, Hotel La Salle, Chicago.

Jan. 25-28. Plant Maintenance & Engineering Show, and concurrent (Jan. 25-27) Conference, Convention Hall, Philadelphia, Pa.

Feb. 1-4. Instrument Society of America, First ISA Instrument-Automation Conference & Exhibit of 1960, Rice Hotel and Sam Houston Coliseum, Houston.

Feb. 8-10. Fifth Military-Industry Packaging and Materials Handling Symposium, Sheraton-Park Hotel, Washington, D.C.

Feb. 12-14. Institute of American Poultry Industries, fact-finding conference and exposition, Municipal Auditorium, Kansas City, Mo.

Feb. 23-24. Eighth Annual National Dairy Engineering Conference, Kellogg Center, Michigan State University, East Lansing, Mich.

Feb. 29-*Mar.* 3. Fourteenth National Conference on Handling Perishable Agricultural Commodities, Purdue University, Lafayette, Indiana.

Mar. 3-4. Second "Better Foods for Better Nutrition Conference," sponsored by Division of Foods and Nutrition and Food Processing of University of Georgia, Center for Continuing Education, University of Georgia, Athens, Ga.

Mar. 6-9. National Assn. of Frozen Food Packers, 19th annual exposition and annual meeting, Conrad Hilton Hotel, Chicago, Ill.

For more information on product at right, circle 6173 . . . see information request blank opposite last page.

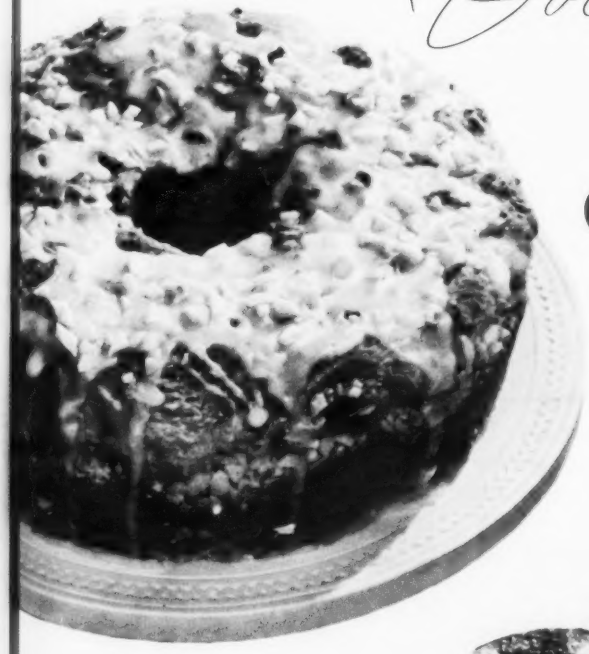
For the Finest...

CORN SYRUP
AND
CORN STARCH

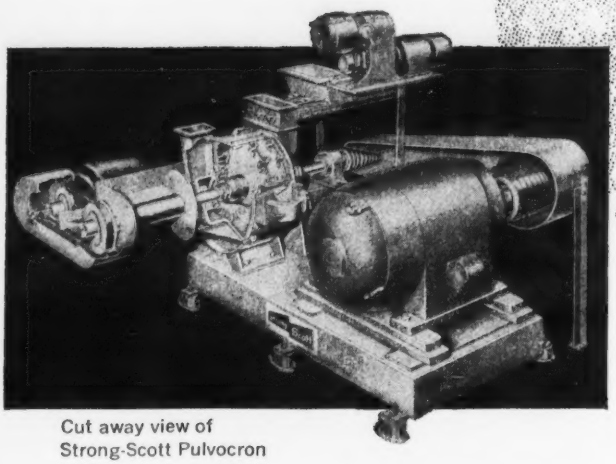
Penick & Ford

PENICK & FORD, LTD.
INCORPORATED

750 THIRD AVENUE, NEW YORK 17, N. Y.; 1531 MARIETTA BLVD., ATLANTA, GA.;
CEDAR RAPIDS, IOWA; 18 CALIFORNIA ST., SAN FRANCISCO 11, CALIF.



Photograph courtesy of The Family Circle, Inc.



Cut away view of
Strong-Scott Pulvocron

Magnified Sample of
SITOSTEROLS
Pulverized to
minus 10 microns

Pulverizing with Selective Particle Size Control!

INCREASE PRODUCTION AND CUT OPERATING COSTS WITH THE NEW PULVOCRON

Because this unit is so versatile, it can pulverize hard or soft materials and can operate in the extreme fineness range (95 to 99% finer than 5 to 10 microns) or it can operate in the coarse particle size range (50 mesh and thereabouts).

The Pulvocron is now being used to solve many size reduction problems in the chemical, food and related process industries. Available in 20 and 38-inch grinding chambers and constructed of carbon or stainless steel.

SPECIAL FEATURES

- **Pulverized product particle size control**
- **Pulverized product temperature control**
- **Installation versatility**
- **Accessibility for inspection**
- **Sturdy construction for years of service**

THE PULVOCRON IS AN ADVANCED IMPACT AND AIR ATTRITION PULVERIZER COMBINED WITH INTERNAL PARTICLE SIZE CLASSIFIER.

TYPICAL INSTALLATIONS USING 20″ PULVOCRON

Product	Soya Sitosterols
Feed Material .	40 Mesh (Approx.)
Pulverized . . .	99.99% minus 10 microns
Capacity. . . .	500 lbs. per hr.

Product	Urea Formaldehyde
Feed Material .	¼ to ⅝″ Diameter
Pulverized . . .	99% minus 80 Mesh
Capacity. . . .	1600 lbs. per hr.

Consult Strong-Scott with your pulverizing problems

The **Strong Scott** Mfg. Co.

451 Taft Street N. E., Minneapolis 13, Minnesota • Phone: STerling 1-7461

EQUIPMENT DESIGNED FOR BETTER PROCESSING

6174 on Reader Service Slip.

Bottles in stalls of baskets take Ferris wheel ride in horizontal retorts. Steam thus envelops bottles more rapidly than when bottles are corded

Cuts processing time 30 per cent

Special baskets holding bottles of chocolate drink rotate in sterilizer — speed retorting and handling with added safety

Problem: Standard method of "cording" bottles in open baskets for retorting at Seven-Up plant in Danville, Va., was hazardous for the two men who performed this work.

Cording, process of systematically stacking bottles, frequently resulted in scuffed and broken bottles.

Solution: Lin Baucom, general manager of Seven-Up, in conjunction with Jack Viermillion, designed a combination retorting and material handling system based on a unique bottle-holding basket.

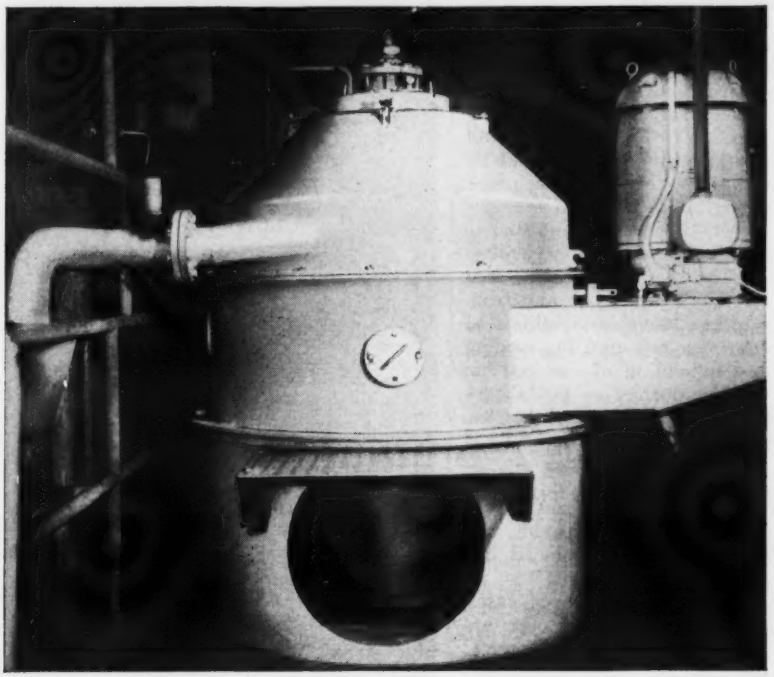
Basket has individual holes or stalls for each bottle. Bot-

(*Continued on next page*)

After bottles are placed in pockets of baskets, no further handling of individual bottles by hand is necessary

Western Condensing Company gets Dry, Clean Lactose Crystals at Lower Processing Cost with the

MERCONE SCREENING CENTRIFUGE



A Mercone screening centrifuge is giving Western Condensing Company of Appleton, Wisc., more efficient separation of lactose crystals from cheese whey. Here's why:

Improved Product—Lactose crystals discharged from the Mercone are exceptionally clean and dry. The high quality of the separated product reduces the amount of refining chemicals required.

Maximum Recovery of Crystals—A DorrClone liquid cyclone used with the Mercone unit separates out fine crystals, recycles them through the Mercone. This Mercone-DorrClone combination gives maximum recovery of lactose.

Lower Operating and Maintenance Costs—The Mercone screening centrifuge occupies half the floor area of previous separation machinery, and has considerably greater capacity. Western Condensing's maintenance costs for the Mercone are less than those for the previous installation.

A compact, completely enclosed sanitary unit, the Mercone screening centrifuge is particularly well adapted to food processing. For information, just drop a line to Dorr-Oliver Incorporated, Stamford, Connecticut.

Mercone and DorrClone are Trademarks of Dorr-Oliver Inc., Reg. U.S. Pat. Off.

DORR-OLIVER
WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

6175 on Reader Service Slip.

(*Continued from preceding page*)

tles are inserted in these stalls crown down, see photos, preceding page.

Baskets are designed to hold 72 bottles and are shaped like three 24-pocket cases, placed end to end.

Horizontal retorts for these baskets are 5 ft 6 in. in diameter and 15 ft long for 24 baskets (72 cases or 1728 bottles); 12 ft long for 18 baskets (54 cases or 1296 bottles).

Sterilization is for 33 minutes at 240 F with steam pressure of 16 psig. Baskets rotate in a circle during processing. Like cars on a Ferris wheel, they retain their horizontal position as they revolve.

Skate conveyors are used for moving racks to and from retorts. Movable sections of conveyor are used for loading and unloading of the retorts; worker pushes or pulls baskets, he does not touch bottles.

Basket handling

After retorting, baskets are lined up on conveyor and wooden cases are placed upside down on bottles.

One basket, or three cases, is pushed into a counterbalanced turner, and turned over so that cases and bottles are right side up. Cases are now ready for stacking or loading.

Results: Manpower is cut in half. Only one man is needed for loading, cooking, unloading, putting cases on bottles and turning cases over.

Because steam surrounds bottles faster in retorts, sterilizing time is cut down and better product results. Overall time saving in cooking and bottle handling is "a good 30 per cent" over old method.

Upside-down loading into individual pockets has virtually ended bottle breakage and scuffing. According to Baucom, breakage has been cut down 80 to 90 per cent compared to old method. Also, cuts and burns resulting from unloading hot bottles have been eliminated.

(Rotary retort is available from the Citrus Products Company, 11 E. Hubbard St., Chicago 11, Ill.)
6176 on Reader Service Slip.

1950..'53..'56..'58..

Two of six Taylor panels controlling 42 retorts at Stokely-Van Camp's Indianapolis plant

Stokely-Van Camp, Inc., Indianapolis, recently ordered two more panels of Taylor FULSCOPE* Controllers with Process Timers and other instrumentation for their retorts. This is their fourth such order during the past nine years—eloquent testimony to their satisfaction with Taylor controls.

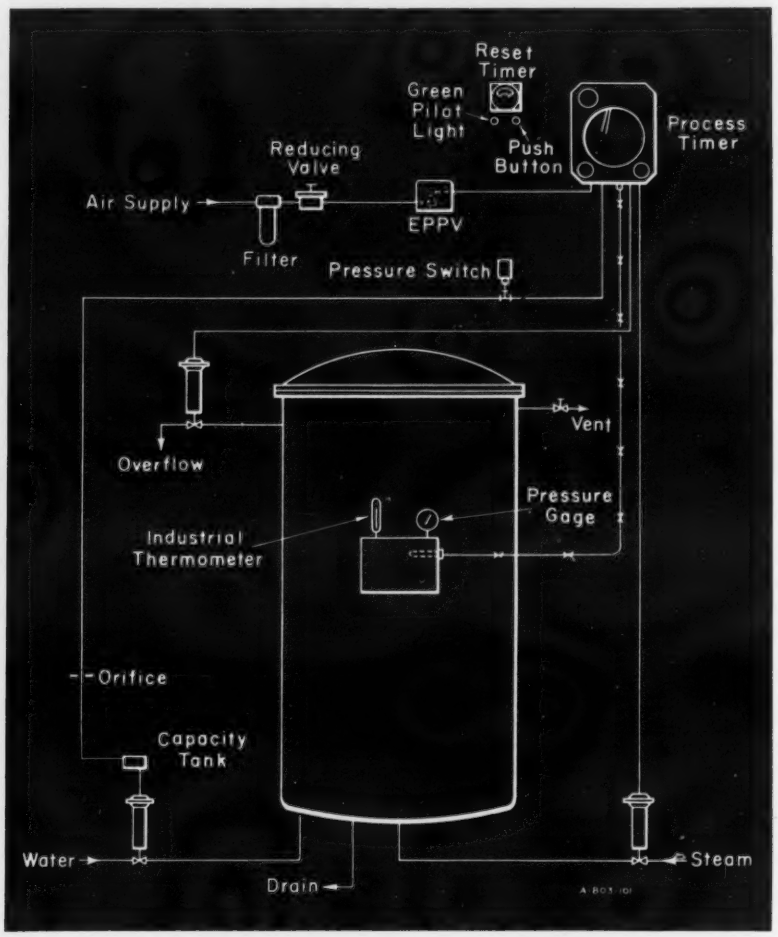
The Retort Control System illustrated here gives Stokely automatic control of time, temperature and pressure for all sizes of containers. The operator simply loads the retort and sets a timer dial.

To keep "Stokely's Finest" in today's highly competitive market means maintaining consistently high quality at the lowest possible operating costs. We are proud of the record for dependable accuracy that Taylor Instruments have established with this fine company.

*Reg. U.S. Pat. Off.

Taylor Instruments

STOKELY STICKS WITH *Taylor*



Schematic drawing of Stokely's retort control system

The Taylor Retort Control System shown above gives Stokely:

Automatic temperature control at processing point

Automatic timing of process period—with automatic shut-off of steam at end of period

Automatic pressure control during cooling by economical use of compressed air in retort, or—

Automatic control of cooling time, depending on size of can. Ask your Taylor Field Engineer how a Taylor control system can save you money, guard *your* product quality. Or write for **Catalog 500.** Taylor Instrument Companies, Rochester, N.Y., or Toronto, Ont.

MEAN ACCURACY FIRST

6177 on Reader Service Slip.

How to select rotary coolers and dryers

Parallel-flow, counter-flow and steam-tube rotary dryers and coolers are discussed and illustrated in 28-page bulletin.

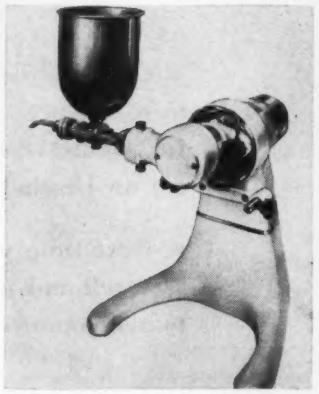
Section of literature explains the availability of a laboratory with pilot plant dryers. It also contains four engineering charts for dryer calculations.

("Dryers, Kilns, Coolers," Bulletin 159, is available from Standard Steel Corporation, 5001 S. Boyle Ave., Los Angeles 58, Calif.)
6178 on Reader Service Slip.

Lab-size homogenizer for quick, easy emulsions

Laboratory-size homogenizer is now available for making emulsions quickly and easily in labs, research or pilot plant applications.

In addition to homogenizing, there are 13 attachments which may be fastened to the motor drive of the unit to mill, granulate, mix, grind, extract, shake, vibrate, knead, agitate, coat, press, fill or mold to fit requirements.

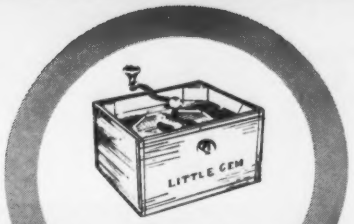


Homogenizer consists of a ½ hp motor-drive base and a homogenizer attachment with a stainless steel hopper

Homogenizer takes oil-in-water or water-in-oil emulsions in quantities up to 66 pounds per hour. Piston action draws premixed material into

(*Continued on next page*)

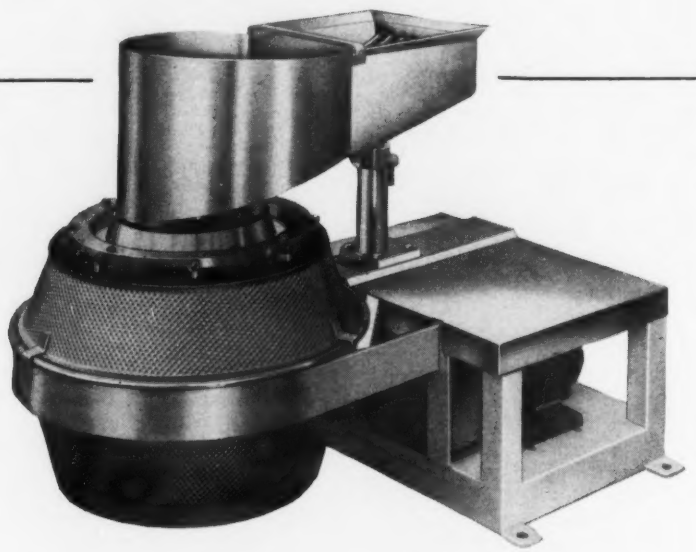
50 years of cutting progress



• OLDEST •
GOOSEBERRY SNIPPER
1910

n e w e s t

MODEL "CC" SLICER
1960



• In 1910, dad tucked his invention, the "little gem" Gooseberry Snipper, under his arm and set out to show a Chicago Pie Company how to get their 25 girls to quit stemming Gooseberries. That machine paid for itself the first day.

• Over the next fifty years, many more Urschel machines were developed to solve specific food packer cutting problems. These also quickly paid for themselves. Today, practically every type of packed food is precision cut on Urschel machines.

• Next time you're passing through, stop in and see our expanded research and manufacturing facilities. See what we're working on today to overcome your problems of tomorrow.

Joe Urschel

JOE URSCHEL
president

PRECISION HIGH-SPEED FOOD CUTTING EQUIPMENT

URSCHEL
LABORATORIES INC.
VALPARAISO, INDIANA

Designers and manufacturers of precision, high speed cutting equipment for food products.

Stop at Urschel Booth #202, Canner's National Convention, Miami Beach, January 18-20, 1960.

6179 on Reader Service Slip.

(*Continued from preceding page*)

cylinder. Emulsion is then forced through a small nozzle opening. Fineness of homogenization is adjusted by positioning a pointer on a graduated scale.

To feed materials to pump, a 1.5 quart capacity stainless steel hopper is provided, or a screw nozzle with a suction filter may be attached to such premixed materials from a storage container.

(Er-we-ka Homogenizer and attachments for motor base are available from Chemical and Pharmaceutical Industry Co., Inc., 90 W. Broadway, New York 7, N. Y.)
6180 on Reader Service Slip.

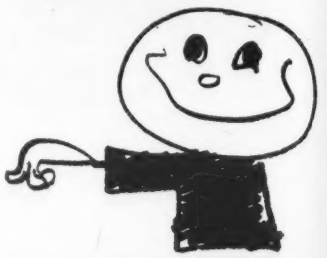
Crush lump or cake from 100 to 15,000 lb/hr

Laboratory, standard and heavy duty crushers all are of same basic design. Two shafts, mounting crushing elements, revolve toward each other. Machines may be used as pre-crushers for pulverizers or other milling units, or as independent crushers.

Complete description of various models and tables of test results are presented in four-page bulletin.

("The Mikro Crusher," Bulletin No. 54-C, is available from the Metals Disintegrating Co., Inc., Pulverizing Machinery Division, 60 Chatham Road, Summit, N.J.)
6181 on Reader Service Slip.

VOTE FOR YOUR FAVORITE CARTOON



See this month's "FP Hall of Fame Cartoon" on page 103 and then vote for large reproduction of your favorite on the Reader Service Slip.

Association News

U.S. Army Quartermaster Research & Engineering Center Laboratories

Natick, Mass., has named Maj. Reuben Pomerantz acting scientific director for research and development. Most recently, Maj. Pomerantz had been technical director and deputy commander of the Quartermaster Radiation Planning Agency, Washington, D.C.

Fifth Military-Industry Packaging and Materials Handling Symposium

at Washington's Sheraton-Park Hotel will include discussion on new industrial packaging trends, lightweight packaging, geometrics in packaging, packaging implications incident to air drop and a look into the future of food packaging. The National Security Industrial Assn. will sponsor a packaging and material handling exhibit as an adjunct to this Symposium.

The meetings are open to everyone in government or industry who is interested in packaging, material handling and shipping. Inquiries should be directed to Lt. Col. George A. Davies, chief, Packaging Branch Hq., USAF, Rm. 4312, Munitions Bldg., Washington 25, D.C.

Rutgers University

Food Science Department has added Dr. Edward A. Nebesky to its staff. He will head up much of the work the Department is planning in the packaging field. Dr. Nebesky had taught at Cornell and the University of Massachusetts and had been product manager with the Cryovac Division of W.R. Grace & Company.

For more information on product at right, circle 6182 see information request blank opposite last page.

Take a look at the "works" of a MIKRO-PULVERIZER, and you'll have a pretty good idea why these units have been receiving the nod of approval from the processing industries for so many years. It's not just a "grinder" . . . but a precision-engineered unit in which each component is carefuly machined and balanced, held to close, uniform tolerances. And this is true of the entire MIKRO-PULVERIZER line, from the smallest pilot plant mill to units producing upwards of ten tons per hour! You'll find the Mikro Laboratories at your disposal, ready to test grind your product and help you select the unit for your particular requirements. As an additional assurance, we're set up to ship genuine Mikro replacement parts to you within 48 hours of order. Bulletin 51A has the full story of models and capacities. It's yours for the asking, with no obligation.

MIKRO-Products

SPAN THE GLOBE

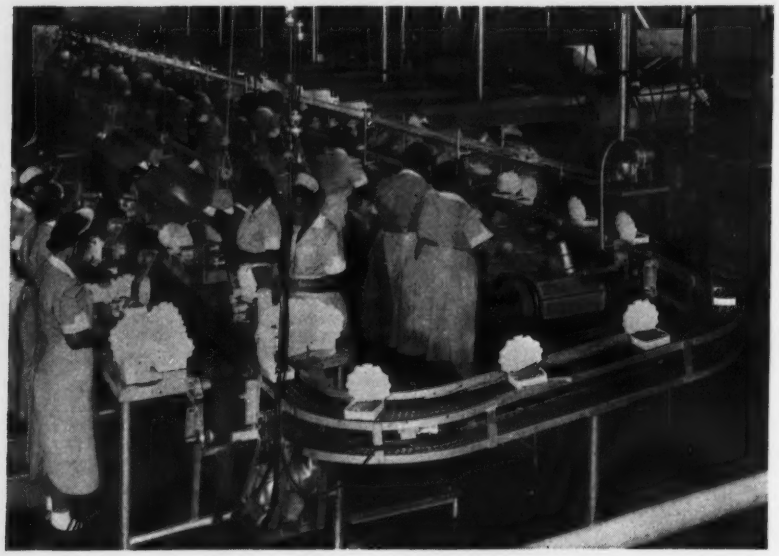
PROCESSING SYSTEMS

Pulverizing Machinery Division • Metals Disintegrating Company, Inc.
63 Chatham Road • Summit, New Jersey

REPRESENTATIVES throughout the United States, Continental Europe, British Isles, Canada, Mexico, Central and South America, West Indies, South Africa, India, Japan, Philippines, Australia and New Zealand.

MANUFACTURING FACILITIES: United States, Canada, Continental Europe, British Isles.

ASHWORTH
METAL PROCESS BELTS
...Carry The Load in Continuous Food Processing!



This patented ASHWORTH Omniflex Belt carries frozen asparagus around corners *and* on the straight-away . . . with NO transfers . . . *What's Your Product?*

Whether it is baking, deep frying, quick-freezing, cooling or any other process operation, you can keep your product on the move better with a belt designed to do the specific job . . . for instance, when the product is carried directly on the belt, either type 304 or type 316 stainless steel can be furnished.

Where analysis of service requirements indicate special design for particular application, Ashworth Field Representatives are trained and qualified to develop the information necessary to enable Ashworth Engineers to "job engineer" the correct belt for that job. Longer life, lower maintenance and proper performance under the most exacting conditions are the qualities you can depend on . . . when you specify Metal Process Belts by ASHWORTH BROS., INC.

Illustrated literature available, write:

ASHWORTH BROS., Inc., Winchester, Virginia

Sales Engineers: Atlanta, Berkeley, Calif., Birmingham, Ala., Charlotte, N. C., Chicago, Cincinnati, Cleveland, Dallas, Danvers, Mass., Detroit, Greenville, S. C., Houston, Long Beach, Calif., New York, Philadelphia, Pittsburgh, Rochester, St. Louis, St. Paul, Tampa, Tonawanda, N. Y., Canada: Montreal, Toronto, Mexico

6183 on Reader Service Slip.

Two methods for improving peach pitting

Steadier production ups capacities over hand feed, which required one or two operators per machine

—1

Peach orienters at Tri-Valley have auto-eject

At Tri-Valley Packing Association, San Jose, Calif., a battery of 14 rotary peach pitters is automatically fed by horizontal orienting-feeding devices. To manually feed peaches with suture forward required two women per pitting machine.

Here's how orienters work: orienting cups traveling horizontally receive size-graded peaches one at a time from rotary hopper.

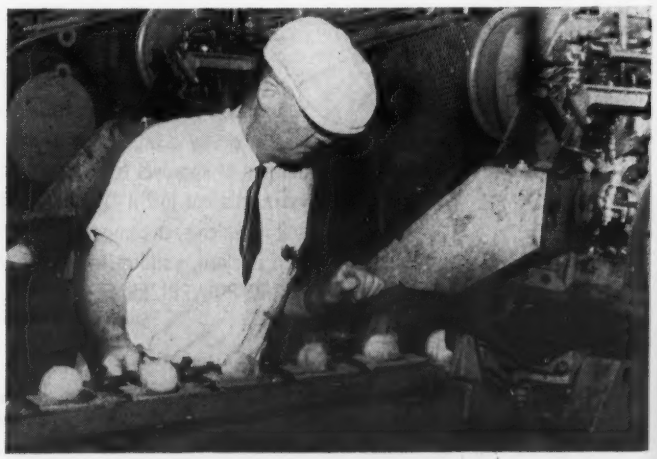
Weight of peach in pocket starts an alignment gear which rotates peach. Rotation stops as soon as gear rises into stem-end of cavity. Suture aligns in proper direction for pitting knives because of elongation of stem cavity and elongation of alignment gear.

If peach is not in alignment, it presses down a finder gear, causing a reject mechanism to eject fruit before it enters pitter.

Ejection generally results from misshapen fruit or fruit having a soft side. These peaches are conveyed to hand-fed pitters.

Because machine-fed action is a steady 96 to 100 peaches per minute, production flow is kept uniform. Tri-Valley production personnel expect increased capacities from their pitters, in addition to lower labor expense.

(FMC peach aligner-feeder is product of Food Machinery & Chemical Corp., Canning Machinery Div., Western: P. O. Box 1120, San Jose 8, Calif.; Eastern: Hoopeston, Ill.)
6184 on Reader Service Slip.



Weight of peach in cup starts aligning gear, which stops when suture is properly oriented

Problem: If cling peaches aren't properly aligned when pit is removed, considerable wastage results. Pit-removal machines are set to remove an oblong pit, so if pit is not aligned, then part of flesh and part pit is removed.

This lost flesh reduces yield, and the portions of pit left in one or both halves require additional hand work.

Solution-Results: Two methods for solving this problem have been in successful use this past season:

2

Vertical peach feeder at Libby's, Sunnyvale

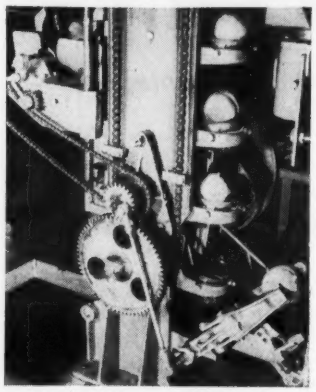
At Libby, McNeill and Libby's big Sunnyvale, Calif. plant, 64 automatic peach aligner-feeders finished first season's operation on fruit cocktail with a successful run.

Feeders are vertical type. Peaches are single-filed into aligning pockets (upper left in detail photo) which travel up and over the vertical elevator.

As cup passes over top, peach drops into preceding cup, which is now right side up. A rapidly rotating horizontal pin bisects bottom of each cup and peach rides on this pin. Its rotation keeps peach tumbling over and over until stem end is found and alignment takes place.

Pin is shaped with a projection halfway between front and rear. This rotating projection is shaped in cross-section to correspond to stem depression of peach, though slightly smaller than stem cavity.

When stem end encounters this rotating projection, peach rests only on the smooth fore-and-aft sections of the pin,

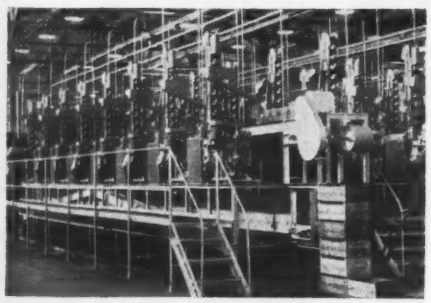


Peaches enter cups at left, are aligned during downward travel on vertical elevator

and ceases to tumble. Elongated shape of pin aligns peach suture in the correct plane for pickup by jaws of the twist-off pitting machine.

Each feeder occupies approximately 4 sq ft of floor space, operates at around 58 peaches per minute.

(Filper automatic peach feeder and twist-off pitters are products of Filper Corporation, 1011 Beecher St., San Leandro, Calif.)
6185 on Reader Service Slip.



Each of 64 pitting machines required a seasonally trained operator up to this year

Rietz

EQUIPMENT FOR THE FOOD PROCESS INDUSTRIES

the most important food companies in the world use Rietz equipment for

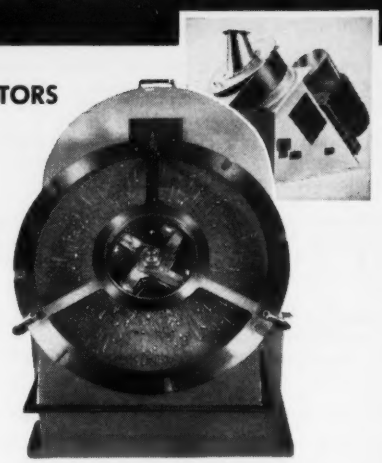
SIZE REDUCTION • MIXING • HEAT EXCHANGE

because they want the benefits of

RIETZ DESIGN
RIETZ DEPENDABILITY
RIETZ SERVICE

Many of these companies are listed in Rietz Bulletin No. R-507 sent to you on request

ANGLE DISINTEGRATORS typify Rietz quality and performance



* Applications Include:
- Wet or dry grinding of difficult materials
- Fine pulping or pureeing
- Coarse crushing or shredding
- Fine dispersion
- Blending
- Homogenizing

* *Depending on screen size and RPM*

5600 RPM was stopped stroboscopically to illustrate three major Rietz Angle Disintegrator advantages

1. 360° effective screen surface
2. Rapid grinding action between rotors and screen
3. Complete accessibility for cleaning

Sales and Engineering Offices in
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Rietz **MANUFACTURING CO.**
Santa Rosa, Calif. • West Chester, Penna.
DISINTEGRATORS • PREBREAKERS • EXTRUCTORS • THERMASCREWS

6186 on Reader Service Slip.

why a Votator® piston filler

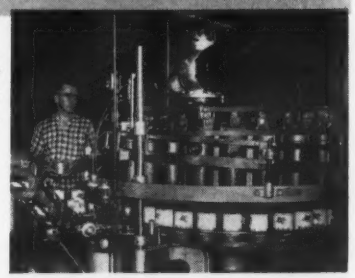
VOTATOR Reg. U.S. Pat. Off.

because no other filler can provide this overall combination of advantages.

- ☑ **ADJUSTABLE LEGS:** Production height between 29" and 32"... sufficient clearance for complete cleaning all around equipment
- ☑ **FULLY ENCLOSED GEARCASE:** Completely protected gears insures permanent lubrication
- ☑ **DIRECT DRIVE TO FILLER BOWL FROM POWER SUPPLY:** Synchronization improved of filling equipment with container equipment
- ☑ **ACCESSIBILITY OF CONTAINER HANDLING PARTS:** Replacement or cleaning of parts made easy and rapid
- ☑ **RAPID LOW COST VALVE GUIDE, PORT AND ROLLER REPLACEMENT SELF-CLEANING VALVE SEATS:** Product purges valve ports and seats with each valve cycle
- ☑ **SMALLER FILLING RADIUS WITH CLOSER CONTAINER CENTERS:** Designed for greater speed of fill per station and to minimize centrifugal force effect
- ☑ **FINE MICROMETER ADJUSTMENT:** Provided for piston cam and fine adjustments can be made while unit is in operation
- ☑ **CAM TRACK LOCKING ADJUSTMENT WITH FOUR POINT SUSPENSION:** Insures greater rigidity and accuracy of fill
- ☑ **LARGER DIAMETER PISTON CAM TRACK:** Insures smoother, more accurate filling
- ☑ **MINIMUM OFFSET OF PISTON ROLLERS:** Side thrust reduced, lessens piston wear
- ☑ **LARGER DIAMETER PISTON ROLLERS AND VALVE ROLLERS:** Skid and wear minimized
- ☑ **NO DRIP:** Valves automatically seat themselves in the port with direct, positive metal to metal valve port and seat contact
- ☑ **NO-CONTAINER NO-FILL CONTROL MECHANISM**
- ☑ **WIDE VARIETY OF VALVE SIZES AVAILABLE:** For varying viscosity and product characteristics, speed and size of container

VOTATOR Fillers, production models for every need, bring to the packaging industry new and proved concepts of precision, speed and smooth, continuous, automatic product flow based on years of field and engineering experience. Machines of this type are today giving profitable, trouble-free service in a wide variety of processing plants. For detailed information, write for bulletin PED 259 today.

VOTATOR Continuous Process Equipment brings automation to processing and packaging. In many fields, VOTATOR Heat Transfer Equipment and VOTATOR Fillers, completely integrated into continuous processing systems, increase production, lower costs and improve product quality.



At this modern plant, in East Boston, Massachusetts, the VOTATOR 27-station Piston Filler is filling Lube Oils, S.A.E. #10-70, with a weight accuracy of ± 1/10 oz. per quart can.

Votator®

CONTINUOUS PROCESS EQUIPMENT & SYSTEMS
GIRDLER PROCESS EQUIPMENT DIVISION

CHEMETRON CORPORATION
Louisville 1, Kentucky

CHEMETRON

NEW YORK • CHICAGO • SAN FRANCISCO • MARIETTA, GA.

6187 on Reader Service Slip.

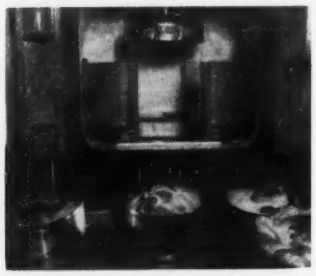
Better hams

Vacuum used before ham-pressing and before can-sealing enhances consumer appeal

Generally accepted method of canning hams traps air in bottom of cans and in meat. Trapped air often affects the shape of the canned hams and tends to discolor adjacent areas of meat.

Usual procedure consists of putting meat in cans and placing filled containers into supporting forms. A manually operated hydraulic pressing plate pushes hams down, forcing them to conform to shape of cans.

Since the meat is forced outward against can bodies as well as down, air is trapped.



Moving from right to left, hams come under vacuumizing chamber (center), into which they are lifted. After vacuum is pulled, hams are pressed into cans. Hams then move off to closing machine where can-tops are vacuum-sealed to bodies

This problem of entrapped air has been overcome by an automatic ham press which lifts filled cans into a vacuum chamber. When chamber is exhausted, almost all air is drawn from can and meat cavities.

While chamber is still under vacuum, ham is pressed into shape by platen.

Conveyor feeds press and removes canned hams. Therefore, operation can be integrated into existing canning lines for use either with automatic or semi-automatic closing machines.

Pressing hams under vacuum forms better-shaped hams, eliminates air discoloration and improves fill-in weight in cans.

No operator is required for press because whole operation is conducted automatically.

(Canco Vacuum Ham Press was developed by the American Can Company, 100 Park Ave., New York, N.Y.)
6188 on Reader Service Slip.

80,000 lb/hr HTST pasteurizer

Plate heat exchanger has capacity ranging from 30,000 to 80,000 lb/hr and maximum operating pressure of 125 psi. It can provide up to 90 per cent regeneration.

Second addition to line is heat exchanger with capacity ranging from 4000 to 15,000 lb/hr. Its maximum operating pressure is 85 psi.

Frames and connecting plates of heat exchangers are painted or stainless steel clad. Carrying bars and channel plates are stainless steel.

Complete description, together with photos and diagrams, is presented in two-page bulletin.

("Plate Heat Exchanger," Bulletin S.A1095-11-58, is available from The De Laval Separator Company, Milk Plant Division, Poughkeepsie, New York.)
6189 on Reader Service Slip.

80 to 500 hp steam or hot water boilers

Immersion firing boilers burn gas inside dispersed, small-diameter firing tubes to secure better heat transfer. Hinged, front combustion section swings open for inspection and cleaning.

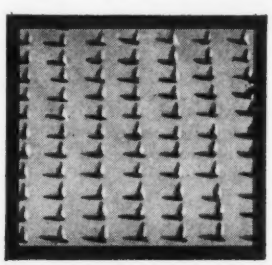
Packaged, low pressure boilers are described and illustrated in four-page bulletin. Specification table listing hp, dimensions, pounds of steam per hr and gross EDR is included.

("Model 15 Senior," Bulletin 5209-B, is available from Sellers Engineering Company, 4876 N. Clark St., Chicago 40, Illinois.)
6190 on Reader Service Slip.

BRAND NEW FROM SIMPLICITY!

3'x 3' MULTI-PURPOSE SCREEN

- pricking
- scalping
- sizing
- dewatering
- trash removal
- industrial waste removal



PRICKING PANEL INCREASES THE RATE OF BRINE OR SWEETENING PENETRATION

The Simplicity "pricking panel," shown at left, is entirely new in the industry; it provides fine mechanical perforations of fruits and vegetables and increases the rate of brine and sweetening penetration. Each and every fruit or vegetable passing over this vibrating panel receives many tiny perforations, thus enabling faster and better penetration of brine or sweetening.

The new Simplicity 3' x 3' Multi-Purpose Screen, with its complete versatility, offers the entire food industry a revolutionary way to cut food processing costs with higher production speeds, a more uniform product and greater flexibility for multi-purpose use. The Multi-Purpose Screen is adaptable to a number of operations and has been used successfully to size, prick, dewater, scalp and remove trash from a number of fruits and vegetables.

The screening section of the Simplicity Multi-Purpose Screen can be equipped with screen cloth of any specification and can be easily replaced with the new pricking panel. The machine itself can be constructed of mild or stainless steel and stainless steel wire cloth is normally used.

Simplicity offers expert counsel for food screening problems based on unequalled experience in screen applications. For more information on Simplicity food screening equipment, write Department 7, Simplicity Engineering Company, Durand, Michigan.

Simplicity
TRADE MARK REGISTERED

ENGINEERING COMPANY • DURAND 6, MICHIGAN

SALES REPRESENTATIVES IN ALL PARTS OF THE U.S.A.

FOR CANADA: Simplicity Materials Handling Limited, Guelph, Ontario.

FOR EXPORT: Brown & Sites, 50 Church Street, New York 17, N. Y.

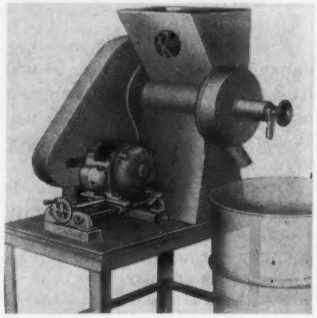
6191 on Reader Service Slip.

... QUICK FREEZING -- 1965 ...
CAMBRIDGE METAL-MESH BELTS give you the low-cost, continuous production you need to beat competition in the '60's!
Foods of all types move through pre-freezing operations such as washing, inspection or packaging faster—without costly manual handling. Uniformity is high because heat, cold or liquids flow through the belt and around the product for thorough treatment. And, Cambridge Stainless Belts can't rust, rot or contaminate foods—assuring high product quality.
Superior belt design and manufacturing techniques mean longer life, fewer repairs, lower operating costs. Belts can be made heatproof, coldproof — in any mesh, weave, metal or alloy—with any side or surface attachments.
Call your Cambridge Field Engineer now. He'll be glad to discuss any aspect of Cambridge Belts—from manufacture to installation and service. Look in the yellow pages under "Belting, Mechanical". Or, write for FREE 130-PAGE REFERENCE MANUAL.
Cambridge
CONVEYOR BELTS
The Cambridge Wire Cloth Co.
Department H • Cambridge 1, Md.
Manufacturers of Wire Cloth, Metal-Mesh Conveyor Belts, Wire Cloth Fabrications
6192 on Reader Service Slip.

Grinds 1/8 in. to 1 in. size up to 100 mesh

Uses: For breaking, crushing or grinding nuts, cocoa beans, mustard seeds, etc.

Features: Grinder has revolving crushing roll inside hopper for preliminary breaking. Seeds or nuts then feed between hardened-steel plates for final grinding.



Crusher can be dismantled in 2 to 3 minutes for cleaning

For coarse or fine sizes, grinding plates are interchangeable.

Description: Fineness of grind is simply adjusted by handwheel which, when turned, regulates clearance between grinding plates. When desired fineness is obtained, setting is locked.

Through use of indicating gage, close control of particle size and duplication of setting is possible.

Variable speed drive is furnished with crusher for best operating results.

(No. 70-H size 4 crusher is a product of Charles Ross & Son Company, 148-156 Classon Ave., Brooklyn 5, N.Y.) 6193 on Reader Service Slip.

Freeze-drying lab equipment

Laboratory freeze-drying units, as well as related equipment are covered in 40-page catalog. Catalog is broken down into sections for freeze-drying equipment, freeze-drying accessories, vacuum pumps and vacuum gages.

An introduction to the cata-

(*Continued on page 56*)

Association News

University of Georgia's

Center for Continuing Education, Athens, Ga., will be site of the second "Better Foods for Better Nutrition Conference," to be held early in March.

Topics to be discussed include: "Why Fortify Foods," "Foods for Shelter Storage," "Solving Food Processing Problems through Research," "Storage of Foods for Maximum Nutritive Value" and "Food Additives in Processed Foods."

Some of the outstanding speakers will be: Drs. Charles Glenn King, J. G. Woodroof, R. G. Garner, Jack H. Mitchell, Jr., and Mr. John W. Sanders, Jr.

For further information write: Dr. J. J. Powers, head, Dept. of Food Technology, College of Agriculture, University of Georgia, Athens, Ga.

Nutrition Foundation's

newly elected president is Charles G. Mortimer, board chairman of General Foods. He succeeds H. J. Heinz II, who had served as Foundation president for more than five yr. Daniel F. Gerber, president of Gerber Products Company, has been elected vice president.

Dairy Society International

has re-elected as board chairman Milton Hult, president of National Dairy Council, Chicago.

Crusade for Freedom

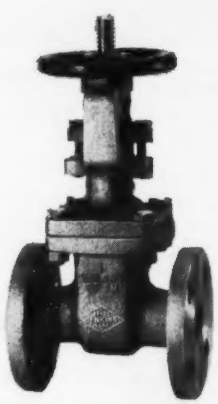
the private, non-profit American organization which supports Radio Free Europe has elected as board chairman W. B. Murphy, president of Campbell Soup Company.

For more information on product at right, circle 6194 see information request blank opposite last page.

For 99 out of 100. . .

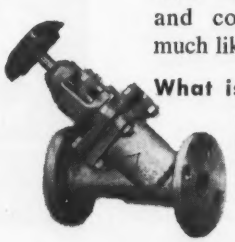
Selection of Stainless Steel Valves can be *as simple as selection of Bronze and Iron valves*

HOW to keep it simple? Don't let the wide selection of stainless steel alloys "throw you"!

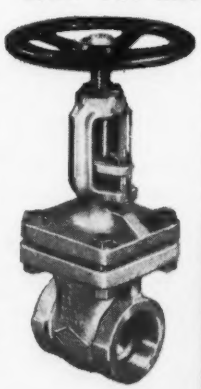


Most of the alloy specs were developed to meet certain highly specialized and rather uncommon needs. Only 1 out of 100 valve users can make practical use of many of the alloys. *Actually, just two or three of the different available alloys will give a big majority of valve users all they want and need.*

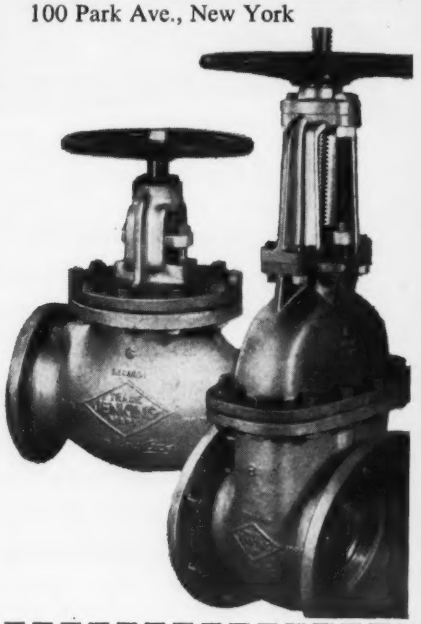
You can judge DESIGN differences between the various "makes" exactly as you do it with Bronze and Iron valves. Look them over and compare. Basically, of course, a Stainless Steel valve is designed and constructed very much like other valves.



What is left to worry about in addition to Material and Design? The same factors you consider in buying ANY valves for long, dependable performance: Are the valves made merely good enough, or to a standard that demands an extra-measure of quality? How good are the castings? How precise and perfect is the machining? How rigid is the inspection and testing during manufacture? These are the factors which specs can't cover. Some of them you can't see when you look at the valve. But you KNOW how to make sure they measure-up to peak standards. You know that the name JENKINS VALVES and the famous Jenkins DIAMOND trademark have been the highest assurance of quality for nearly a century.



Specify "*Jenkins*" as well as the metal alloy to assure fullest satisfaction. Your Jenkins Distributor has patterns and alloys to satisfy most industrial needs. Of course, they meet valve industry specifications and the high standards established by leading users of stainless steel valves. Jenkins Bros., 100 Park Ave., New York



Jenkins Bros.
100 Park Ave., New York 17.
Send Jenkins Stainless Steel Valve Catalog to —

Name & Title.....

Company.....

Address.....

JENKINS VALVES

JENKINS SINCE 1864 Jenkins Bros.

(*Continued from page 54*)

log offers a discussion on why to freeze-dry, what to freeze-dry and how to freeze-dry.

Fully illustrated with diagrams and photos throughout, catalog contains information on freeze-dryers, mechanically refrigerated freeze-mobiles, automatic shell freezers, dry ice machines, dry ice storage cabinets, dry ice capacity extenders and vacuum pumps and gages.

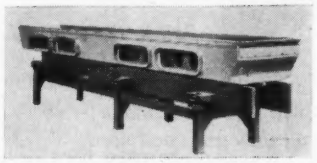
("Freeze-Drying and Related Equipment for Laboratories, Second Edition", 40-page catalog, is available from Arthur S. La Pine Company, 6001 S. Knox Ave., Chicago 29, Ill.)

6196 on Reader Service Slip.

Cooling or drying on vibratory conveyor

Features: For granular material ranging in size from ½ in. down to 60 mesh, stainless steel wire-belt conveying surface is used. Hot air or gas is passed through surface for drying.

When used for fine materials, dryer is equipped with solid-plate conveying surface. Heat is applied from below by low-pressure steam or heated air.



Direct dryer shown, as well as indirect dryer, is made in standard length of 10 or 20 ft

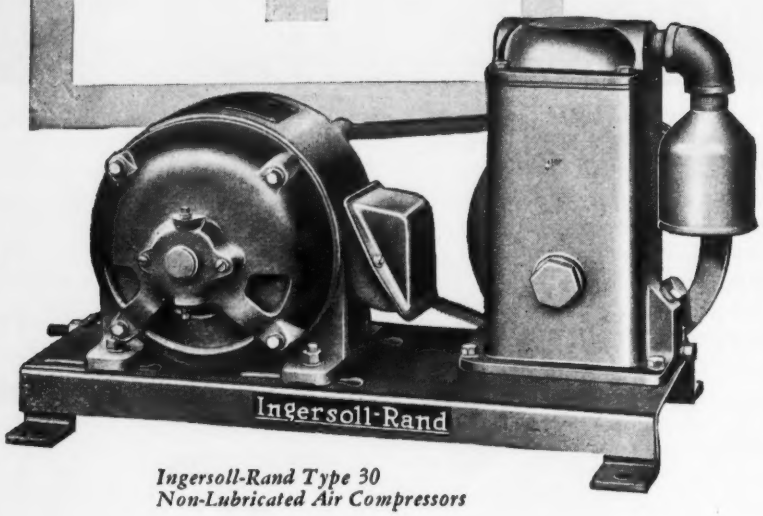
Description: Dryer — either direct or indirect type — can be used for drying or cooling.

Speed of travel and depth of material can be adjusted as desired through variable-amplitude drive. Operation is automatic.

(Mechanical-drive dryers are produced by The Jeffrey Manufacturing Company, 856 N. Fourth St., Columbus 16, Ohio.)

6197 on Reader Service Slip.

I-R clean, oil-free compressed air



Ingersoll-Rand Type 30
Non-Lubricated Air Compressors

For applications requiring oil-free air, Ingersoll-Rand's Non-Lubricated Compressor is the economical answer. These I-R compressors are in wide use in dairies, breweries, distilleries, chemical and food plants.

These Non-Lubricated Compressors are designed with the compression cylinder separated from the crankcase by a cast-in wall and a special seal . . . available bare, baseplate or tank-mounted.

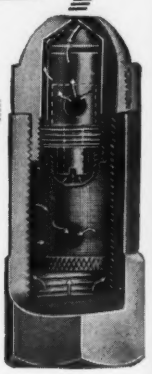
For complete data, write today.

Ingersoll-Rand

3-805 11 Broadway, New York 4, N. Y.

6195 on Reader Service Slip.

There's a Monarch nozzle for every spray job!



If the liquid can be sprayed with direct-pressure rely on MONARCH advanced design NOZZLES

For a perfect spray, many food processing plants prefer Monarch Nozzles.

Monarch's advanced design reduces clogging and guarantees dependable applications to . . .

★ WAX FRUITS
★ RINSE VEGETABLES
★ POWDER MILK
★ DRY EGGS
★ WASH FILTER CAKE
★ HUMIDIFY BANANA ROOMS

Send for Catalog 1

Monarch MFG. WORKS, INC.
3401 GAUL STREET
PHILADELPHIA 34, PA.

6198 on Reader Service Slip.

Plastic-sealed walls still look brand new, require no repainting at Starkist after 3 years' service. Treated rafters and plywood sheathing in ceiling withstand constant steam-condensate condition in precooked tuna cooling room

Coatings peeled, roof timbers failed . . . but problem's licked now

Preservative-treated wood and plastic coatings foil dry rot, mildew and paint failure in steamy atmosphere

R. ERICKSON, Chief Engineer
MAX LOEWE, Director of Research
StarKist Foods, Inc.
as reported by **KARL ROBE**

Problem: When StarKist Foods, Inc., Terminal Island, Calif., built their plant No. 4 in 1954, specifications called for conventional roof construction — truss beam with ship-lap sheathing.

In the 60 by 180 ft room where tuna is cooled after precooking, steam and vapors rise from racked tuna and condense on ceiling. This causes near-ideal conditions for fungus attack and underfilm corrosion.

Steam cleaning is used throughout the day in this area to keep it hygienically clean. This adds to condensate problem under roof.

Constant steam-condensate condition contributed to failure of roof ventilator within six months and eventually led to dry-rot of the 2 in. by 12 in. rafter timbers.

Painted concrete walls were difficult to maintain. To prevent mold, scrubbing and washing was required every two or three weeks and periodic repainting was necessary.

Solution: Roof construction: The 2 by

(*Continued on next page*)

EDMONT CASE NO. 636: Icing refrigerator cars, $16.67 a dozen neoprene gauntlets lasted 20 shifts. Edmont recommended a lower priced plastic coated No. 414 Snorkel, which wore over 40 shifts, at more than 50% saving.

EDMONT GLOVE CUT COSTS IN HALF, HANDLING ICE

In the case above, the Edmont-recommended Snorkel glove wore more than twice as long because it fit the job. Its vinyl coating has a special finish which gives excellent wet grip. Extremely flexible jersey liner, wing thumb and curved, pre-flexed finger pattern aid dexterity. *Extra-coating* on palm now gives 20% longer wear.

No. 414 SNORKEL
vinyl plastic coating

No. 660W GRAB-IT
rough rubber coating

No. 404 SNORKEL
vinyl plastic coating

EDMONT CASE No. 612: In a West Coast fish cannery, cotton gloves lasted only half a shift. Edmont recommended a rough finished, natural rubber coated glove (No. 660W Grab-it) which wore as long as 28 shifts, reducing monthly glove costs per worker from $7.60 to 61¢.

EDMONT CASE No. 637: Handling wire-bound crates of poultry wore out ordinary plastic coated gloves in 6 shifts. Edmont recommended the plastic coated No. 404 Snorkel. It wore 20 shifts, reduced glove costs 75%.

FREE TEST OFFER TO LISTED FIRMS: We make more than 50 types of gloves to fit different jobs. Describe your operation, materials handled and temperature condition. We will supply samples of the correct glove for on-the-job testing. Edmont Manufacturing Company, 1212 Walnut Street, Coshocton, Ohio. In Canada write MSA, Toronto.

Edmont

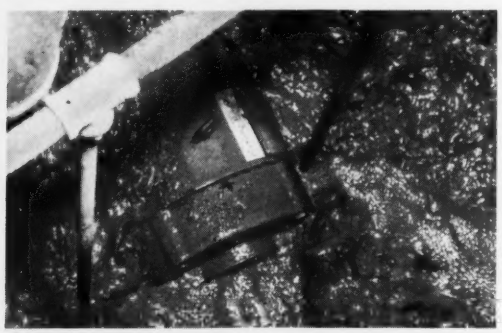
Edmont JOB-FITTED GLOVES

6199 on Reader Service Slip.

PICKLED in a 4% brine solution!

CHOKED
in a tornado of abrasive dust!

FROZEN
for weeks at 75° C below zero!



BURIED ALIVE
in thick, sluggish mud!

nothing . . . but nothing stops Super-Seal open-type motors

Thanks to exclusive Poxeal and Silco-Flex insulations, Super-Seal motors have shown endurances that even enclosed motors couldn't match. Results and reasons available from your A-C representative or distributor. Or write General Products Division, Milwaukee 1, Wisconsin

Poxeal, Silco-Flex and Super-Seal are Allis-Chalmers trademarks.

ALLIS-CHALMERS A-1151

6200 on Reader Service Slip.

(*Continued from preceding page*)

12 in. rafters were replaced by timbers which had been pressure-impregnated with preservative. Lumber was obtained already treated and involved no special handling on the job.

Preservative materials in the timbers inhibit decay fungus before it forms, prevent mold growth and destroy termites. Sodium chromate in the formula acts as a fixative to prevent leaching out of the preservative.

Instead of ship-lap, the new roof was sheathed with Douglas fir exterior-type ¾th in. plywood, also pressure treated with the wood preservative. The treated plywood added $300 to cost of roof but is considered money well spent. The 4 by 8 ft. panels are applied faster than ship-lap, and fewer joints and laps are present to harbor mold and fungus.

Ventilators were coated with a vinyl coating guaranteed five years.

Concrete walls in the holding room were sand-blasted and sealed with an air-drying vinyl formulation which is also guaranteed for five years.

Results: There has been no evidence of failure of any of the coatings in the 3 years since the changes were made. No evidence of dry rot, fungus or mold attack can be found in the timbers.

Condition of coatings on walls, timbers and metal ventilators is still excellent and it is a good bet that they will easily endure through the five-year guarantee period.

Maintenance expense in the holding room is now extremely low, in contrast with the former costly schedule which required almost a continual round of work on some aspects of the room.

(Wolmanized pressure-treated lumber is product of Wood Preserving Division, Koppers Co., Inc., Koppers Building, Pittsburgh 19, Pa.)
6201 on Reader Service Slip.

(Vinyl coating systems are products of Soc-Co Plastic Coating Co., 13216 Laureldale Ave., Paramount, Calif.)
6202 on Reader Service Slip.

Disposable plastic gloves and boots

Uses: For protecting foods from hand contamination. Gloves can also be used for protecting hands from chemicals and powders.

Boots can be used to prevent contamination from shoes wherever desired.

Plastic gloves can be worn on either hand, retain manual dexterity and touch-sensibility

Features: Gloves have strong, heat-welded seams with smooth edges.

Boots will withstand several hours wear. They can be easily slipped on and off.

Boots are designed to slip over wearer's regular shoes

Description: Made from medium or heavy-weight polyethylene, gloves are available in small, medium or large sizes, packed 144 per box.

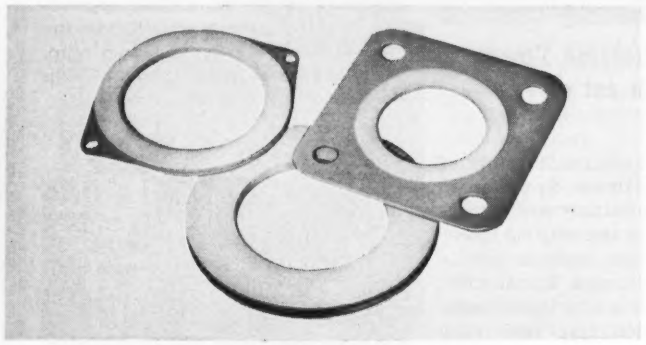
Polyethylene boots are made in one large size. They are packed in rolls of 50 and 100 and list at $3.50 and $6.50 per roll respectively.

(Poly-D Gloves are a product of The Wilson Rubber Company, Industrial Division, 1200 Garfield Ave., S.W., Canton 6, Ohio.)
6203 on Reader Service Slip.

(Footgard Boots are a product of Plasticsmith, Inc., PO Box 1071, Pittsburgh, Calif.)
6204 on Reader Service Slip.

ENGINEERED TEFLON* PRODUCTS
for Food Processing

Lattice-Braid Teflon Packings



Teflon-jacketed Gaskets

LONG, TROUBLE-FREE SEALING AGAINST REACTIVE MIXTURES, BLENDS

Here are two natural suggestions for sealing reactive materials . . . sealing that won't leak, that lasts with little maintenance, that won't contaminate the food being processed:

Garlock Lattice-Braid† Teflon Packings are engineered for strength, long life—and are chemically inert. Less gland pressure is required to effect an adequate seal, resulting in longer sleeve and packing life, less downtime and maintenance. Add to these features the advantages of Teflon: resists chemical action and cleaning processes and is non-contaminating; extremely low coefficient of friction; withstands temperatures ranging from −120° to +500°F. In Lattice-Braid construction each strand passes diagonally through the body of the packing at a 45° angle. This through-and-through braiding makes a completely unified structure of greater strength. Ordinary braided packings become worthless once the single outer braid is worn through. On Lattice-Braid, there is no single outer braid; the braiding, therefore, holds together far beyond the limits of other packings, resulting in longer life. Apply to pumps and valves. Catalog AD-131.

Garlock Teflon-jacketed Gaskets give you the advantage of using Teflon without sacrificing resiliency and deformability . . . particularly important on process equipment, piping, flanges and fittings. Garlock offers Teflon-jacketed gaskets in four basic designs—slit envelope, milled envelope, formed shield, and double jacket. Once you've selected the design best suited for your application, choice of filler material and thickness of the gasket become extremely important. Here, too, Garlock has a material for every operating condition—for high pressures, a corrugated stainless steel filler is suggested. Where the application is for low bolt loads, a rubber filler should be sandwiched between woven asbestos cloth. Cork, rubber, asbestos are just a few of the filler types available. Catalog AD-154.

For prompt service, call your Garlock representative at one of Garlock's 26 sales offices and warehouses throughout the U.S. and Canada. Or, write

GARLOCK

The Garlock Packing Company, Palmyra, N.Y.

Canadian Div.: The Garlock Packing Company of Canada Ltd.

Plastics Div.: United States Gasket Company

Order from the Garlock 2,000 . . . two thousand different styles of Packings, Gaskets, Seals, Molded and Extruded Rubber, Plastic Products

*DuPont Trademark for TFE Fluorocarbon Resin
†Registered Trademark

6205 on Reader Service Slip.

For sanitary handling of liquids; also CIP

Sanitation of product lines depends mainly upon fittings, valves and pumps where bacteria may lodge and grow. Specifications, line drawings and photographs of complete line of sanitary fittings and valves are presented in 38-page bulletin.

Included in literature are bolted clamp fittings for CIP lines, quick clamp fittings and valves, and threaded sanitary fittings and valves.

In addition, bulletin contains information on automatic sanitary valves for cleaning solutions and product lines, special fittings, centrifugal pumps and tools specially designed for use on CIP or take-down circuits.

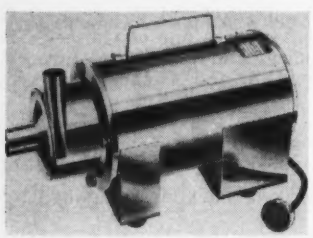
Tables of useful pipeline installation data are also included.

("Sanitary Fittings and Valves," Bulletin G-559, is available from the Cherry-Burrell Corporation, Cedar Rapids, Iowa.)
6206 on Reader Service Slip.

All-stainless pump is portable

Especially designed for clean-in-place service

Uses: For pumping detergent through dairy, food and beverage lines; also through spray-balls to wash tanks.



Compactly-built pump is easily dismantled for cleaning or service

Features: Centrifugal pump is portable—it weighs only 30 lb and measures 14 in. by 8 in.

Pump-head can be turned 360° so that discharge line

SARCO

SARCO T

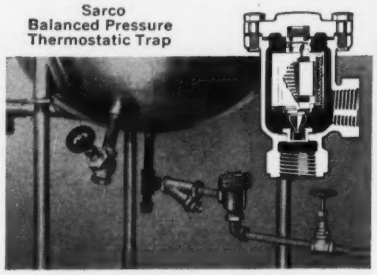
NOW . . . MATCH STEAM TRAPS T

THERE'S no such thing as an all-purpose steam trap. That's why it pays to know what each trap has to offer. Here are five examples that demonstrate how you can match the correct steam trap type to the exact requirements of *each* application.

EXAMPLE 1: Outside Tracer Lines: A tough set of requirements

One of the most demanding sets of requirements a steam trap has to face is found in *outside steam tracing*. The trap must not only rid tracer lines of condensate and air immediately they're formed, but it must do so under exacting conditions. Pressures on each trap may vary widely. Installations may be remote and inaccessible to service. Water hammer may be a constant threat; freezing may be a hazard. Only the unique Thermo-Dynamic trap takes all these demands in stride. The Sarco TD-50 operates perfectly *without adjustment* through its full pressure range of 10-600 psi. It's virtually immune to water hammer and won't freeze when installed with a free discharge. Maintenance is, therefore, negligible. Compact, requiring no external support, the TD-50 is just about the easiest trap in the world to install. Once it's installed, you can forget it. You can count on an extremely long, trouble-free service life with minimum maintenance attention.

More closely than any other model, the TD-50 approximates an all-purpose trap. However, special application requirements might dictate the use of another type of Sarco trap. Sarco engineers stand ready to help you solve any trapping problems.



EXAMPLE 2: For steam jacketed process kettles: a trap that operates immediately on start-up and self adjusts to both low and high pressures

When a large steam-jacketed process kettle starts up, the condensate load is high, and all air in the jacket must be released quickly. At this stage, however, the jacket pressure is low; yet it builds up rapidly as the process continues. Because a SARCO No. 9 Balanced Pressure Thermostatic Trap is wide open on start-up, it releases initial air and condensate without the need for a bypass. And because it is self-adjusting, it works just as efficiently during the first processing stage when the jacket pressure is high. There are no seats to change for various working pressures. You can see why it is the obvious choice for steam jacketed process kettles.

EXAMPLE 3: How to prevent water-logging in unit heaters and blast coils

All unit heaters and blast coils have a relatively small internal volume in comparison with their steam condensing capacity. Even slight water-logging can reduce heat output seri-

Impartial advice on trapping because
ONLY SARCO MAKES ALL 5 STEAM TRAP TYPES

S

TOPICS

SARCO

TO YOUR TRAPPING NEEDS

ously. Pressures may vary widely under automatic temperature control and so may the load because of variable demand. A trap to handle this application must adjust itself instantly to pressure and load charges. The most precise answer to this problem is the SARCO Float and Thermostatic Trap—and here's why: it releases air on start-up and during running, and, because it discharges condensate continuously, it does not set up in the system violent pressure changes that would upset close control.

Sarco Liquid Expansion Trap

EXAMPLE 4: How to release low temperature condensate

When condensate cannot be returned to the boiler feed tank either because of distance or because it may be contaminated, it's economical to utilize some of the sensible heat as well as the latent heat of the steam.

For this purpose a trap must be capable of releasing condensate to temperatures as low as 100° F.

The sound trap selection here is the SARCO No. 871 Liquid Expansion Trap because it can be set to release condensate at temperatures down to 100° F. regardless of supply pressure. This performance assures maximum steam economy. The Sarco No. 871 handles the starting load easily because of its wide open valve, which throttles the flow as the condensate temperature rises. Furthermore waterhammer cannot reach the operating element. No other type is as nearly perfect for this specific problem.

Sarco Bucket Trap

EXAMPLE 5: Economic handling of Water Hammer and Corrosive Conditions

In applications in which water hammer or corrosive conditions are encountered but in which low pressures or extremely high back pressures preclude the use of the Thermo-Dynamic trap, the Sarco Inverted Bucket Trap is recommended. While the Sarco I. B. is not exactly a fuel miser, its relatively rugged construction will withstand considerable water hammer; and, when it is fitted with stainless steel internal parts, it offers excellent resistance to corrosion.

* * *

CONCLUSION: The right application is the economical installation

When you choose steam traps that serve their purpose without frequent adjustment, and without maintenance or replacement problems, you save on down-time, man-hours, spare parts, and production slowdowns.

You can get the money-saving solution to every trap selection problem by consulting Sarco. You get impartial solutions, because only Sarco makes all 5 types of steam traps: Thermo-Dynamic*, Thermostatic, Float Thermostatic, Liquid Expansion, and Bucket.

You also get the benefit of Sarco's 50 years of specialized experience in the manufacture and application of temperature regulators, industrial air vents, pipeline strainers, dial and industrial thermometers, heating and cooling controls, heat exchangers, heating control systems and heating specialties.

For literature or impartial help in solving your steam trapping or control problems, contact your local Sarco Sales Representative, or write direct to Sarco. 1440

*U.S. Pat. No. 2,817,353. T.M. Reg. U.S. Pat. Off.

SARCO COMPANY, INC.

635 Madison Avenue, New York 22, N. Y.
Plant: Bethlehem, Pa.

6207 on Reader Service Slip.

can be positioned in any direction.

Description: Pump capacity is 50 gpm at 20 psi.

Inlet connection is 1½ in. tube size; outlet is 1 in. Both can be furnished with any type fitting.

All parts in contact with liquid being pumped are made of stainless steel. Motor base and housing are also of SS.

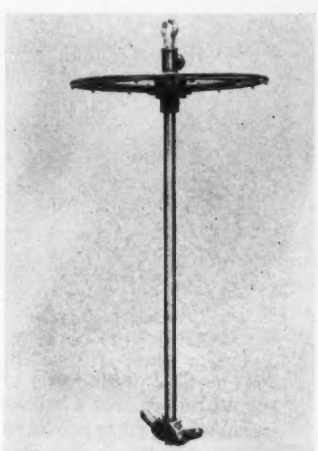
Pump is powered by a continuous duty, ¾ hp, single-phase motor.

(Stainless steel pump is a product of Stainless Steel Pump Co., 108 Wiggs St., Griffith, Ind.)
6208 on Reader Service Slip.

Milk-truck spray has no movable parts

Uses: For mechanical or automatic cleaning of bulk-milk pick-up trucks.

Features: Detergent solution is pumped through four spray nozzles; two small ones which spray in a square pattern and two large nozzles which spray in round pattern.



Unit weighs less than 40 lb, can therefore be easily positioned in manhole cover

Spray patterns overlap to cover top third of tank surface. Downward flow of solution then cleans balance of interior. With proper pressure, sprays reach 11 ft on each side of unit, thus making it possible to clean 22 ft long tank.

(*Continued on next page*)

(*Continued from preceding page*)

Description: The four spray nozzles are mounted opposite each other, on a stainless steel tube, one square-pattern and one round-pattern nozzle on each side.

Other end of tube is fitted with rubber-gasketed manhole cover which holds unit in place.

Weight of total unit is less than 40 lb making it portable.

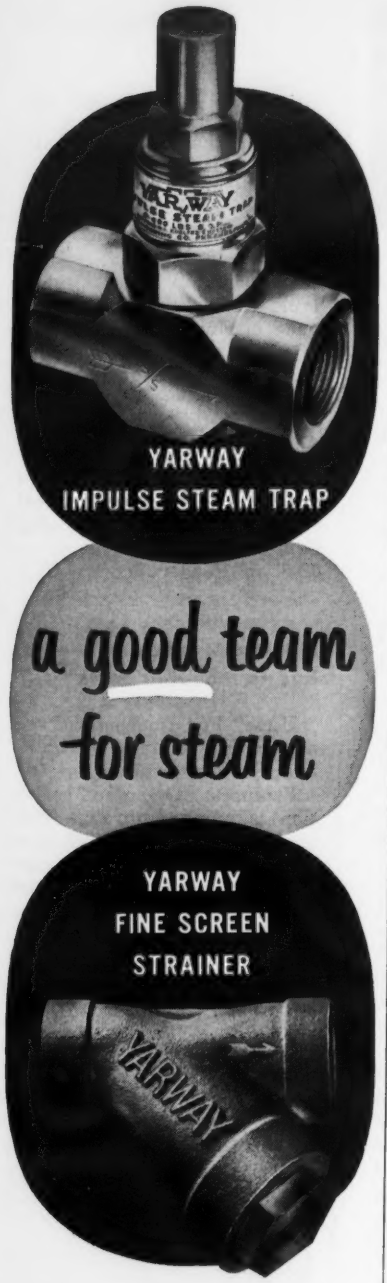
(Milk-tanker spray is a product of Oakite Products, Inc., 127A Rector St., New York 6, New York.)
6210 on Reader Service Slip.

Selecting sanitary centrifugal pumps

How to figure pump-head and other engineering factors that should be considered when selecting a pump are presented in 16-page catalog.

Booklet contains large capacity chart showing gpm or lb/hr vs. head in ft. Friction-loss charts, fluid-viscosity tables and engineering drawings and specifications are included.

("Centrifugal Pumps," Catalog PC 759, is available from the G & H Products Corporation, 5718 Fifty-Second St., Kenosha, Wis.)
6211 on Reader Service Slip.



This Yarway team has scored high—over a million installed on all types of steam equipment. Stocked and sold by 270 Industrial Distributors. For free Steam Trap Book, write YARNALL-WARING CO., 100 Mermaid Ave., Philadelphia 18, Pa.

go YARWAY with confidence

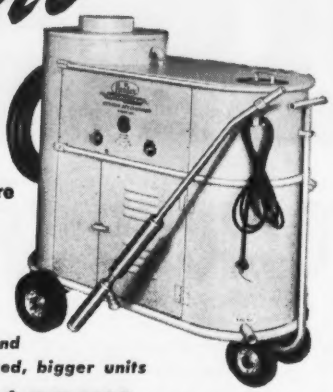
6209 on Reader Service Slip.

"You're right! . . . We did over age it!"

Imagine—

ALL THIS:

- Fully automatic ignition
- 50 to 150 p.s.i. gun nozzle pressure with modulated fuel control
- 100 g.p.h. capacity
- Built-in soap tank and anti-siphon valve
- Large rubber-tired wheels



—all these and other features found only in higher-priced, bigger units

FOR ONLY $495.00 F.O.B. FACTORY

Pantex SPEEDYSTEAM®

It's today's biggest buy in a budget-priced quality-built STEAM-JET CLEANER

"100"

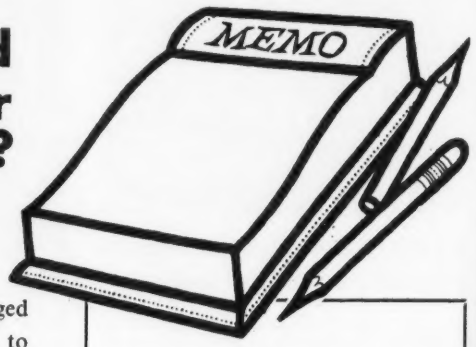
Write for Bulletin—SC-500

PANTEX MANUFACTURING CORP.

P.O. BOX 660 K, PAWTUCKET 1, R. I.

6212 on Reader Service Slip.

Changed Your Address?



BE SURE TO LET US KNOW!

If you have recently changed your address you'll want to make sure that your copy of Food Processing continues to reach you . . . just use this convenient form.

Please answer all the questions as completely as possible.

Mail request to
Reader Service Dept.
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Former Company Affiliation .....

Former Address .....

Your Name ..... Present Title .....

Present Company .....

Main Product .....

Rating of Company .....

Street Address .....

City ..... Zone No. ..... State .....

Water knives for washing or cooling

Controlled spray-pattern and controlled liquid-impact are two features of the nozzles described and illustrated in 12-page bulletin.

Brochure features a nozzle-selection chart which is based on volume, pressure, blade factor and other variables.

Chart is designed so that selection of correct nozzle for such applications as vegetable and fruit washing, meat washing and can and bottle washing is relatively easy.

Other tables which are included list orifice size vs. range for various spray-shapes and angles.

("Rex Water Knife," Bulletin 5983, is available from the Chain Belt Company, Milwaukee 1, Wis.)
6213 on Reader Service Slip.

Breaks bottles without flying glass

Uses: For breaking glass containers from tiny vials to gallon jugs.

Motor furnished with glass breaker is totally enclosed

Features: Self-cleaning hopper prevents flying glass particles. Impeller which does actual glass breaking is made of magnesium moly steel to withstand tough usage.

Description: Glass breaker is furnished with 55-gal drum.

(Rescor bottle breaker, Model No. 1000 is made by Rescor Industries, 18 W. Broad St., Mt. Vernon, N.Y.)
6214 on Reader Service Slip.

New economical protection for food plant floors!

PENNTROWEL®

CORROSION-RESISTANT SURFACING

Beat the high cost of food plant floor maintenance with this all-new resin surfacing material from Pennsalt. Penntrowel protects your floors with a tough, chemically-resistant coating that shrugs off the steady attack of acids and alkalis—including powerful food plant cleaners and sanitizers as well as organic food acids. It's easy to keep sanitary, takes cleaning as often as needed without letting any moisture get through to the floor . . . resists wear from heavy foot and vehicle traffic too!

Penntrowel was first developed and used by Pennsalt to combat floor corrosion in our own chemical plants. Made available for wider use, it has proved its effectiveness in many types of plants across the nation. Penntrowel is easy to apply without expensive equipment—you just trowel it on. It cures overnight for next-day service. And its cost is surprisingly low.

Write today for complete information

Corrosion Engineering Products Dept. 315
PENNSALT CHEMICALS CORPORATION
Natrona, Pa.

Manufactured in Canada by G. F. Sterne & Sons, Ltd., Brantford Ontario

Pennsalt Chemicals
ESTABLISHED 1850

6215 on Reader Service Slip.

HELP YOURSELF TO OUR MOST EXPENSIVE RESEARCH

Have you a "good" product you'd like to convert into a superior one? A processing problem? An idea for a new product that doesn't quite come off?

Call on Sunkist citrus research for help.

We've been working 44 years squeezing new uses and products out of California oranges and lemons. The payoff has been 118 U.S. Patents...and over 400 new products.

Exchange

All this "know how" is at your service. Sunkist technical men will be glad to work *with* you—in your own plant—or *for* you—in their own citrus research laboratory. Write, and a Sunkist man will call on you.

Sunkist Growers

PRODUCTS SALES DEPARTMENT

6216 on Reader Service Slip.

CAN LEMON JUICE DO A JOB FOR YOU?

If you're a food processor... fresh, frozen or canned...fruits and vegetables...fish or fowl... lemon juice can do *at least* one thing for you:

- It can prevent or retard off-flavor tendencies...
- Maintain and even enhance natural food flavor—keep food fresh-tasting longer...
- Prevent oxidation, preserve color, texture and flavor during and after processing...
- Adjust acidity in low-acid foods–retard enzyme action...
- Replace salt in low-sodium diet foods...

And that's only a beginning. The list of jobs lemon juice can do is an extensive one.

If you're not using it...you may be letting the competition get a lead on you. Don't market a product that's merely "as good as" the rest. Exchange Brand Concentrated Lemon Juice—made by Sunkist—can often make it superior for only a penny or two—and add a selling ingredient of distinction to your label.

Why not let your Sunkist man talk it over with you?

The address: Sunkist Growers, Products Sales Dept., 720 East Sunkist Street, Ontario, Calif.

FDA OFFICIALLY publishes list of

182 Chemicals Found Safe For Use In Food

Manufacturers need not furnish further proof of safety

A list of 182 chemicals which have been found safe for use in food has been published by the FDA in the **Federal Register**. Manufacturers who use these chemical food additives need not furnish further proof of their safety.

The list is based upon a proposed list of 188 food chemicals (other than common food ingredients such as salt, pepper, sugar, vinegar, baking powder, etc., which are accepted as safe without question) offered for consideration by 355 qualified experts throughout the country.

All but six of these chemicals may be immediately classified as safe. Further consideration is needed for four food coloring materials (carbon black, charcoal, titanium dioxide and ultramarine blue), and two substances originally listed under classification of buffers, acidifiers and neutralizers — oleic and linoleic acid.

FDA points out that the fact that these six are not on the list does not mean that their use in food is prohibited. It simply means that proposed usage must be reviewed for safety under the provisions of the Food Additive Amendment.

Chemicals on the list, which are generally recognized as safe for use in foods are as follows: (note that those additives which have a use tolerance will be found on page 67).

CHEMICAL PRESERVATIVES

Ascorbic acid
Ascorbyl palmitate
Calcium ascorbate
Calcium propionate
Erythorbic acid
Potassium sorbate
Propionic acid
Sodium ascorbate
Sodium propionate
Sodium sorbate
Sorbic acid
Tocopherols

BUFFERS AND NEUTRALIZING AGENTS

Acetic acid
Aluminum ammonium sulfate
Auminum sodium sulfate
Aluminum potassium sulfate
Ammonium bicarbonate
Ammonium carbonate
Ammonium hydroxide
Ammonium phosphate (mono- and dibasic-)
Calcium carbonate
Calcium chloride
Calcium citrate
Calcium gluconate
Calcium hydroxide
Calcium lactate
Calcium oxide
Calcium phosphate
Citric acid
Lactic acid
Magnesium carbonate
Magnesium oxide
Potassium acid tartrate
Potassium bicarbonate
Potassium carbonate
Potassium citrate
Potassium hydroxide
Sodium acetate
Sodium acid pyrophosphate
Sodium aluminum phosphate
Sodium bicarbonate
Sodium carbonate
Sodium citrate
Sodium hydroxide
Sodium phosphate (mono-, di-, tri-)
Sodium potassium tartrate
Sodium sesquicarbonate
Sulfuric acid
Tartaric acid

EMULSIFYING AGENTS

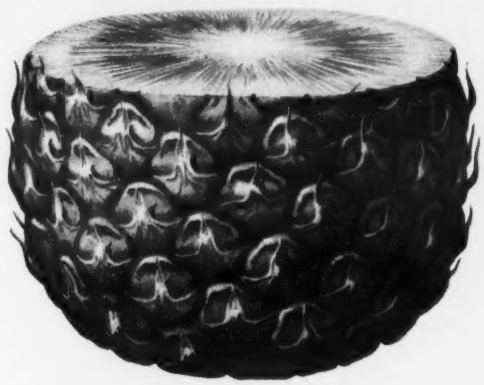
Diacetyl tartaric acid esters of mono- and diglycerides from the glycerolysis of edible fats or oils
Mono- and diglycerides from the glycerolysis of edible fats or oils
Monosodium phosphate derivatives of mono- and diglycerides from the glycerolysis of edible fats or oils
Propylene glycol

MISCELLANEOUS

Acetic acid
Aluminum sodium sulfate
Aluminum sulfate
Butane
Calcium phosphate, tribasic
Caramel
Carbon dioxide
Carnauba wax
Citric acid
Glycerin
Glycerol monostearate

(*Continued on next page*)

*As fresh as Givaudan's new flavor**



***IMITATION PINEAPPLE FLAVOR F-1213!**

We suggest, in all due modesty, that you will be surprised at the fidelity with which fresh natural pineapple matches the flavor of this new Givaudan creation.

We feel justified in making this turnabout comparison because the flavor of Imitation Pineapple Flavor F-1213 and that of the fresh fruit are virtually identical.

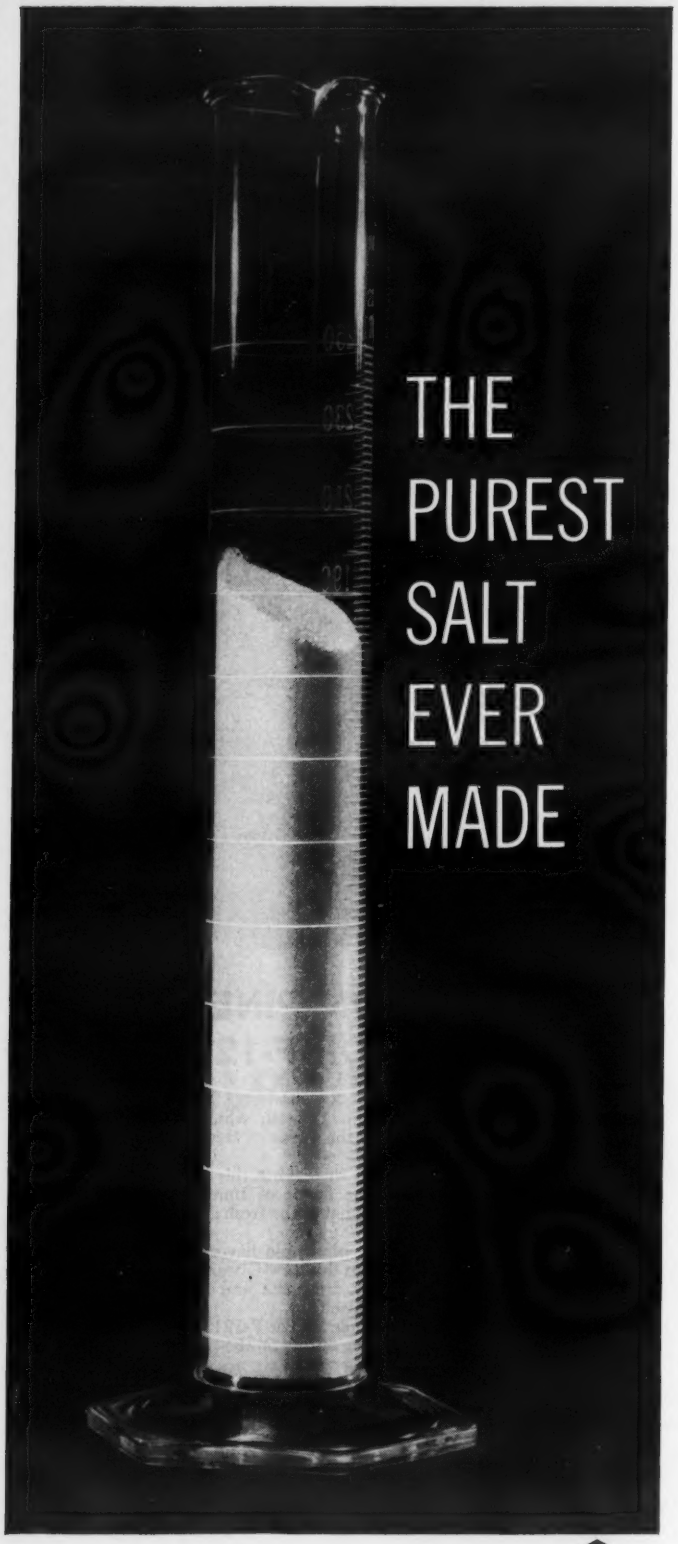
There are many pineapple flavors that resemble the canned type, but this new Givaudan product has the true sweetness, freshness and bouquet of the natural pineapple itself.

Imitation Pineapple Flavor F-1213 is the result of long and persevering efforts on the part of our flavor chemists—a creation which we are proud to add to our widely known line. Its concentration and stability make it ideal for those products in which a fresh pineapple flavor is desired at a minimum cost. Its powdered counterpart, *Permaseal® Imitation Pineapple Flavor F-2749*, is also a faithful reproduction of the fresh fruit flavor. May we send you samples and further information?

Givaudan Flavors Inc.

321 West 44th Street, New York 36, N. Y.

6217 on Reader Service Slip.



■ By actual analysis, Sterling Purified Salt is more than 99.9% sodium chloride. It contains less than 30 ppm calcium and magnesium, less than 0.2 ppm trace metals. This exceptional purity, as well as uniform granulation, makes Sterling Purified Salt ideal for butter, oleomargarine, cheese, salad dressings, potato chips, baked goods, canning, meat packing . . . hundreds of other processes where flavor, color and texture must be protected. Free-flowing Sterling Purified Salt can be used in dry form. Or it can be made into clear, fully saturated brine in the new Brinomat dissolver. The all-plastic Brinomat, available in many sizes, has the highest flow rating of any similar dissolver. Contact International Salt Co.,headquarters: Clarks Summit, Pa. District offices: Boston, Buffalo, Charlotte, Chicago, Cincinnati, Detroit, Newark, New Orleans, New York, Philadelphia, Pittsburgh, St. Louis.

INTERNATIONAL STERLING SALT SALT COMPANY

"A STEP AHEAD IN SALT TECHNOLOGY"

6218 on Reader Service Slip.

FDA Safe

(*Continued from preceding page*)

Helium
Magnesium carbonate
Magnesium hydroxide
Monoammonium glutamate
Nitrogen
Papain
Phosphoric acid
Propane
Propylene glycol
Triacetin (glyceryl triacetate)
Tricalcium phosphate
Sodium carbonate
Sodium phosphate
Sodium tripolyphosphate

NON-NUTRITIVE SWEETENERS

Calcium cyclohexyl sulfamate
Calcium saccharin
Saccharin
Sodium cyclohexyl sulfamate
Sodium saccharin

NUTRIENTS

Ascorbic acid
Calcium carbonate
Calcium oxide
Calcium pantothenate
Calcium phosphate (mono-, di-, tribasic)
Calcium sulfate
Carotene
Ferric phosphate
Ferric pyrophosphate
Ferric sodium pyrophosphate
Ferrous sulfate
Iron, reduced
l-Lysine monohydrochloride
Niacin
Niacinamide
D-Pantothenyl alcohol
Potassium chloride
Pyridoxine hydrochloride
Riboflavin
Riboflavin-5-phosphate
Sodium pantothenate
Sodium phosphate (mono-, di-, tribasic)
Thiamine hydrochloride
Thiamine mononitrate
Tocopherols
a Tocopherol acetate
Vitamin A
Vitamin A Acetate
Vitamin A palmitate
Vitamin B_{12}
Vitamin D_2
Vitamin D_3

SEQUESTRANTS

(No attempt has been made, in this list, to designate those sequestrants which may also function as chemical preservatives.)

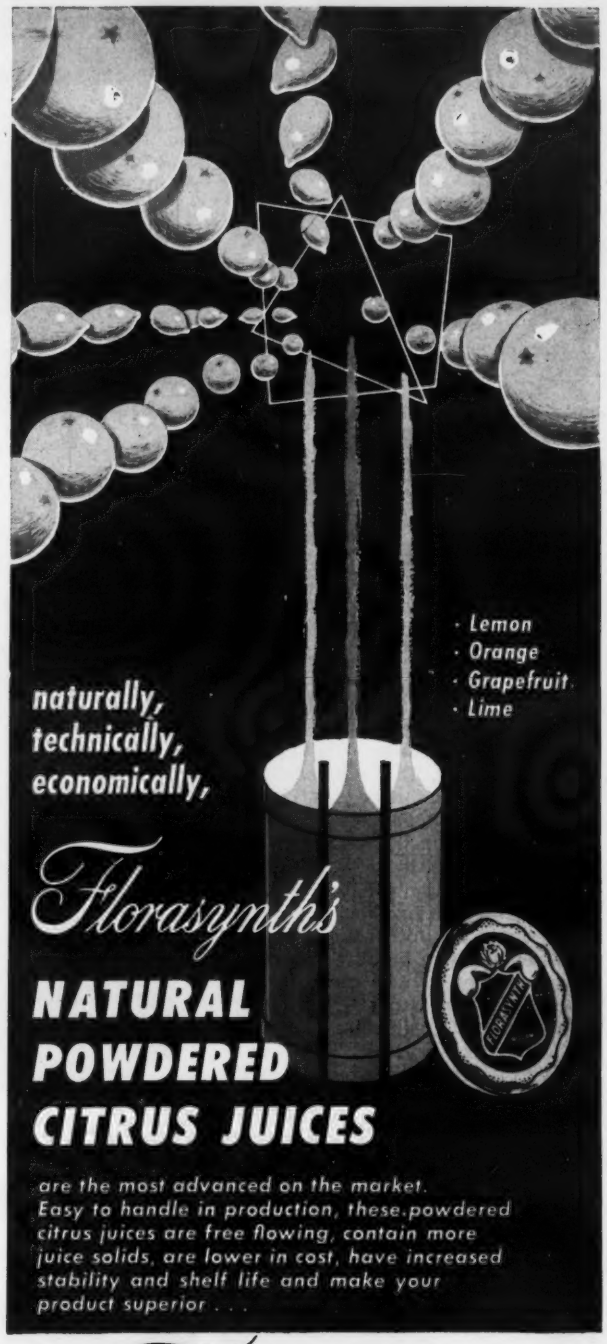
Calcium acetate
Calcium chloride
Calcium citrate
Calcium diacetate
Calcium gluconate
Calcium hexametaphosphate
Calcium phytate
Citric acid
Dipotassium phosphate
Disodium phosphate
Monocalcium acid phosphate
Monoisopropyl citrate
Potassium citrate
Sodium acid phosphate
Sodium citrate
Sodium diacetate
Sodium gluconate
Sodium hexametaphosphate
Sodium metaphosphate
Sodium phosphate (mono-, di-, tribasic-)
Sodium potassium tartrate
Sodium pyrophosphate
Sodium tartrate
Sodium tetrapyrophosphate
Sodium tripolyphosphate
Tartaric acid

STABILIZERS

Agar-agar
Carob bean gum (locust bean gum)
Carrageenin
Guar gum

Food Chemicals List

Product	Tolerance	Specific uses or restrictions
ANTICAKING AGENTS		
Aluminum calcium silicate	2 per cent	In table salt
Calcium silicate	5 per cent	In baking powder
Calcium silicate	2 per cent	In table salt
Magnesium silicate	2 per cent	In table salt
Tricalcium silicate	2 per cent	In table salt
CHEMICAL PRESERVATIVES		
Benzoic acid	0.1 per cent	
Butylated hydroxyanisole	Total content of antioxidants not over 0.02 per cent of fat or oil content, including essential (volatile) oil content, of food	
Butylated hydroxytoluene	Total content of antioxidants not over 0.02 per cent of fat or oil content, including essential (volatile) oil content, of food	
Caprylic acid		In cheese wraps
Dilauryl thiodipropionate	Total content of antioxidants not over 0.02 per cent of fat or oil content, including essential (volatile) oil content, of food	
Gum guaiac	0.1 per cent (equivalent antioxidant activity of 0.01 per cent)	In edible fats or oils
Nordihydroguaiaretic acid	Total content of antioxidants not over 0.02 per cent of fat or oil content, including essential (volatile) oil content, of food	
Potassium bisulfite		Not in meats or in food recognizable as a source of vitamin B_1
Potassium metabisulfite		Not in meats or in food recognizable as a source of vitamin B_1
Propyl gallate	Total content of antiobidants not over 0.02 per cent of fat or oil content, including essential (volatile) oil content, of food	
Sodium bensoate	0.1 per cent	
Sodium bisulfite		Not in meats or in food recognizable as a source of vitamin B_1
Sodium metabisulfite		Not in meats or in food recognizable as a surce of vitamin B_1
Sodium sulfite		Not in meats or in food recognizable as a source of vitamin B_1
Sulfur dioxide		Not in meats or in food recognizable as a source of vitamin B_1
Thiodipropionic acid	Total content of antioxidants not over 0.02 per cent of fat or oil content, including essential (volatile) oil content, of food	
EMULSIFYING AGENTS		
Cholic acid	0.1 per cent	Dried egg whites
Dexoxycholic acid	0.1 per cent	Dried egg whites
Glycocholic acid	0.1 per cent	Dried egg whites
Ox bile extract	0.1 per cent	Dried egg whites
Taurocholic acid (or its sodium salt)	0.1 per cent	Dried egg whites
MISCELLANEOUS		
Caffeine	0.02 per cent	In cola type beverages
Ethyl formate	0.0015 per cent	As fumigant for cashew nuts
Magnesium stearate		As migratory substance from packaging materials when used as a stabilizer
Sorbitol	7.0 per cent	In foods for special dietary use
Triethyl citrate	0.25 per cent	Egg whites
NUTRIENTS		
Copper gluconate	0.005 per cent	
Cuprous iodide	0.01 per cent	In table salt as a source of dietary iodine
Potassium iodide	0.01 per cent	In table salt as a source of dietary iodine
SEQUESTRANTS		
(No attempt has been made, in this list, to designate those sequestrants which may also function as chemical preservatives)		
Isopropyl citrate	0.02 per cent	
Sodium thiosulfate	0.1 per cent	In salt
Stearyl citrate	0.15 per cent	


· Lemon
· Orange
· Grapefruit
· Lime
naturally,
technically,
economically,
Florasynth's
NATURAL
POWDERED
CITRUS JUICES
are the most advanced on the market.
Easy to handle in production, these powdered citrus juices are free flowing, contain more juice solids, are lower in cost, have increased stability and shelf life and make your product superior . . .

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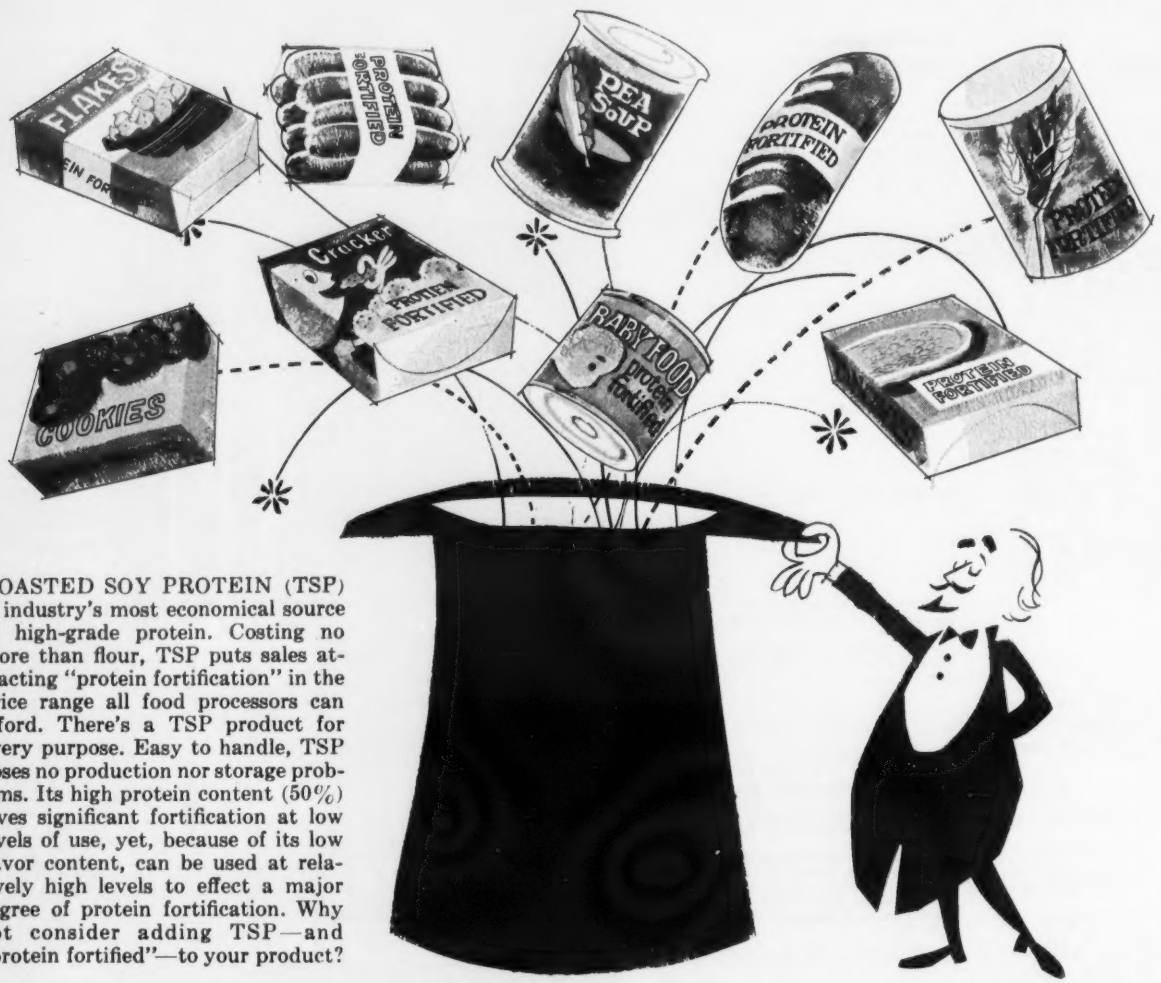
Sales Offices in Principal Foreign Countries

6219 on Reader Service Slip.

Add General Mills **TOASTED SOY PROTEIN** *to your product . . . and the magic words* **"protein fortified"** *to your package*



TOASTED SOY PROTEIN (TSP) is industry's most economical source of high-grade protein. Costing no more than flour, TSP puts sales attracting "protein fortification" in the price range all food processors can afford. There's a TSP product for every purpose. Easy to handle, TSP poses no production nor storage problems. Its high protein content (50%) gives significant fortification at low levels of use, yet, because of its low flavor content, can be used at relatively high levels to effect a major degree of protein fortification. Why not consider adding TSP—and "protein fortified"—to your product?

Is there a success opportunity here for you?

Sausage makers use TSP to reduce binder costs. Seeking to improve profits without loss of product quality, sausage makers are adopting TSP because of its low cost as their choice of "legally permitted binders." TSP's high protein content makes it the perfect complement to meat.

Cookie makers use TSP in fast selling specialties. TSP permits the cookie and cracker baker to produce delicious high protein specialties that "bite easy and chew tender." Now, through use of TSP, new character and sales appeal can be added to all types of cookie and cracker specialties.

Package Food processors find TSP ideal for creating new high-protein line. TSP is easy to incorporate in most formulas, can transform your present product line into a parallel-line of "protein fortified" items—adding to your total share of the market, profitably.

Get all the facts today! Learn how you too can use TSP to create entirely new food products or to enrich existing ones. Write, wire or phone . . .

OILSEEDS DIVISION
Minneapolis 26, Minnesota

General Mills

6220 on Reader Service Slip.

ingredients

California opposes FDA on acidification of tomatoes

The Canners League of California has filed a brief objection of record to the FDA's rejection of acidifying tomatoes. However, they have not requested a hearing.

They apparently plan to marshall more information. Of particular interest is the current survey of the pH of raw tomatoes in main growing areas across the country, which is now being collated by National Canners Association.

Results from this survey should be available in a few months.

Variety, growing conditions, fertilization and other factors affect the pH of tomatoes, but individual effects from each of these factors is largely unknown.

Data from the current survey will be fed into computers at the University of California in an effort to determine the relative effect on pH which each variable exerts.

If varietal, growing and other conditions combine to deliver a higher than normal pH, processing times must be raised. This results in a mushy, degraded product when normally ripe fruit is packed.

Acidification of higher pH tomatoes would forestall overcooking, as well as offering additional pH safety from spoilage of all types.

Though the hazard is hypothetical, this includes protection against botulism, if ultra-long-chance distribution should place some cans in a critical pH range.

Botulism, though never found in commercially canned tomatoes, has occurred in several cases from home canned tomatoes.

Degree of ripeness is another variable affecting pH level. The pH in a can con-

(*Continued on page 71*)

For more information on product at right, circle 6221 . . . see information request blank opposite last page.

W INGREDIENTS FOR NEW AND IMPROVED FOOD PRODUCTS

FLO-SWEET BLENDS... a growing family of fine sweeteners

When only the right *combination* of characteristics will meet your requirements for a top quality sweetening agent . . . turn to Flo-Sweet. In the growing family of Flo-Sweet blends, you will find a rich variety of types and ratios from which to choose.

Doubly refined and united by a special comogenizing process for utmost uniformity, Flo-Sweet blends open up whole new fields for food manufacturers who are readying new table delicacies to tap tomorrow's rich and growing markets. To find out how these versatile sweetening agents can best fit into your own new food products development program, consult your Flo-Sweet Engineer. Or write for the brochure "New Ingredients for New and Improved Food Products." It tells all about four new Flo-Sweet liquid sugars!

A FLO-SWEET BLEND FOR EVERY NEED!

These principal Flo-Sweet blends are comogenized at the refinery for complete uniformity:

SUCRODEX (*cane sucrose and dextrose*)
INVERDEX (*cane invert and dextrose*)
AMBERDEX (*amber sucrose and dextrose*)
SUCROSE/CSU (*sucrose and corn syrup*)

REFINED SYRUPS & SUGARS, INC.
YONKERS, NEW YORK

SERVING INDUSTRIAL SUGAR USERS EXCLUSIVELY FROM YONKERS, ALLENTOWN, DETROIT, TOLEDO

FLO-SWEET
FIRST IN LIQUID SUGAR

Attention cereal makers:

Here's how Tora Food® can give you a new sales-building nutrition story at low cost

If you need a powerful new story to spark the sales of your cereal, Tora Food (Red Star's brand name for Torula Yeast U.S.P.) is your answer. And you can actually *save* money. Here's what we mean:

How will Tora Food improve nutritional content of cereal? Here are some specific nutritional factors housewives know and look for in cereal. This chart shows you how Red Star Tora Food increases these factors in a typical cereal—corn meal.

PER 100 GRAMS OF CORN MEAL

	Corn meal as is	Corn meal plus 3% Tora Food
Protein	9.00 grams	10.50 grams
Vitamin B_1	0.30 milligram	0.66 milligram
Vitamin B_2	0.08 milligram	0.20 milligram
Niacin	1.90 milligrams	2.80 milligrams

What totally will Tora Food add to cereal?
(At a level of 3# to 100#)

Vitamin B_1	163.5 milligrams worth
Vitamin B_2	54.5 milligrams worth
Niacin	408.6 milligrams worth
Vitamin B_6	40.8 milligrams worth
Para-amino benzoic Acid	20.4 milligrams worth
Pantothenic Acid	150.0 milligrams worth
Folic Acid	95.3 milligrams worth
Choline	4.8 grams worth
Inositol	5.4 grams worth
High quality Protein	1.5 lbs.

Here is a nutritional "barrage" that can't help but impress the nutrition-conscious housewife.

How can Tora Food actually save you money? The ingredients listed above would cost you 87.33¢ at current price levels, if you bought them individually. You get these *same* ingredients in the *same* amounts for only 54¢ in Red Star Tora Food. That's 33.33¢ saved. (Incidentally, the same amount of brewer's yeast would cost you between 72¢ and 84¢.)

In addition, Tora Food saves you money on handling and inventories. Instead of buying, storing, handling and keeping books on 10 or more different ingredients, you need handle only *one* when you use Red Star Tora Food.

How else will Tora Food improve saleability of cereal? Tora Food will intensify the flavor of your cereal. It has a mild, pleasant flavor with the ability to enhance the natural flavor of the product to which it is added.

Furthermore, Tora Food is an antioxidant and helps give your cereal longer shelf life.

Who besides cereal makers can use Tora Food? Almost any food processor. Here we've talked specifically about cereal makers, but baby food processors are already using Red Star Tora Food successfully. And here are some other types of processors who can use Tora Food to big advantage: spice, soup, chocolate, peanut butter, sauce and gravy, health food, smoked yeast and pharmaceuticals.

If you are a cereal maker (or *any* food processor) who wants a new sales-boosting nutrition story, write to us. We'll be happy to show and discuss with you work and analysis that has been done. Or if you prefer, we'll be happy to have a nutritionist call on you. Write to the address below.

Nutritional Division

RED STAR YEAST & PRODUCTS CO.

Milwaukee 1, Wisconsin

6222 on Reader Service Slip.

(*Continued from page 68*)
taining three peak-ripe tomatoes will be higher than in cans where greener tomatoes are distributed.

Eastern canners say that acidification would mask the use of overripe or spoiled product. California canners contend that use of poor raw materials and improper canning practices are under rigid government inspection, and acidification would not affect this control.

In general, pH levels have not been studied intensively in the past. California canners have noticed higher pH levels over the past several years.

So far, Eastern, Mid-West and Texas canners have not been concerned with higher pH's. During the past year some reports of high pH tomatoes from East of the Rockies have been made.

The acidification of tomatoes is now a dormant issue, but will be revived as soon as additional data are available.

Specialty chemicals as food additives

Complete list of specialty and industrial chemicals are included in newly published 6-page product index. Of particular interest are the specialty chemicals as food additives including antioxidants and mold and rope inhibitors.

Industrial chemicals are classified into seven sections including acids and anhydrides, alcohols, plasticizers, aldehydes, aromatic intermediates, solvents and miscellaneous. Data features as well as shipping information are provided for the industrial chemicals.

A section of the product index is also devoted to newly developed products now available for evaluation.

(Copies of the product index, Bul. No. P-102, may be obtained from Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Company, Kingsport, Tenn.)

6223 on Reader Service Slip.

Myverol® Distilled Monoglycerides

	Type 18-00	Type 18-07	Type 18-40	Type 18-85
Source material	Fully hydrogenated lard	Fully hydrogenated cottonseed oil	Prime steam lard	Refined cottonseed oil
Monoester content (min.)	90.0%	90.0%	90.0%	90.0%
Saponification value	155-165	155-165	160-165	150-160
Iodine value	1	1.0 (max.)	45 (approx.)	80-90
Glycerol content (max.)	1.0%	1.0%	1.0%	1.0%
F.F.A. (max.): as stearic / as oleic	1.5%	1.0%	1.5%	1.5%
Specific gravity	0.96 at 75°C	0.94 at 75°C	0.96 at 60°C	0.96 at 60°C
Congeal point (approx.)	68°C	67°C	54°C	46°C
Clear point (approx.)	73°C	76°C	60°C	56°C
Form	Bead	Bead	Plastic homogenized fat	Plastic homogenized fat
Net shipping weight, lb.	250	250	400	400

For the engineering of food texture

Here are four fats for foods, typical of the broad variety of distilled monoglycerides you can get from DPi. Their high monoester content, the result of a unique segregation of fat molecules in the vapor phase, makes possible precise engineering control over the physical structure of foods which contain fats.

High mono content makes these emulsifiers more efficient, hence less expensive, than mixtures of mono- and diglycerides. Emulsions are easier to form and less emulsifier need be used.

Myverol Distilled Monoglycerides are bland, stable, and free from catalysts and soaps. There is nothing in them that might affect taste, color, or odor. To learn which of them might improve your control of food texture, write ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York and Chicago • W. M. Gillies, Inc., West Coast • Charles Albert Smith Limited, Montreal and Toronto.

distillers of monoglycerides made from natural fats and oils

DPi

Also . . . vitamin A in bulk for foods and pharmaceuticals

Distillation Products Industries *is a division of* **Eastman Kodak Company**

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The flavor

STAYS

in your Stews — Hamburgers — Meat Pies — Soups — Ravioli — when you use

Denny's IRELAND

BONELESS-PROCESSING

BEEF

- Packed and assembled only at our Waterford plant
- 90% to 95% lean
- Packed separately in primal cuts
- Bright, fresh-frozen in polyethylene-lined 55 # boxes

For more information on how you can profit by using DENNY'S IRELAND Processing Beef in your own food processing, write, wire or call *collect* to

George Stutz or Catherine Delaney at:

M. H. GREENEBAUM, INC.

Sole U.S.A. Representatives

165 Chambers St., N. Y. 7, DIgby 9-4300

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Get the COUNT!

Durant Sales Engineers will supply a PRODUCTIMETER for every and any counting need in your plant.

Send for Bulletin #200

DURANT MANUFACTURING CO.

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51 Thurbers Ave., Providence 5, R.I.

Representatives in Principal Cities

PRODUCTIMETERS SINCE 1879 *Count Everything*

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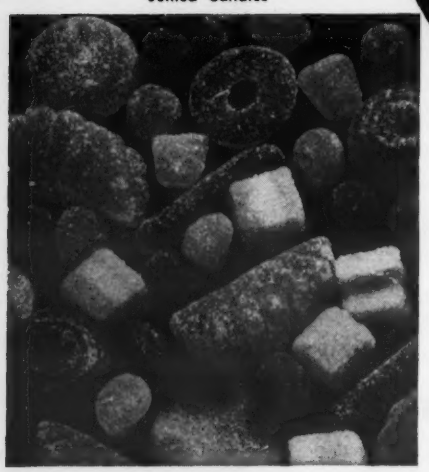
CONFECTO-JEL

Especially made for Jellied Candies



for better product consistency and quality

Always Depend On

SPEAS

APPLE PECTINS

35 years

- Adaptable to wide range of PH levels.
- Neutral color and flavor—blends naturally with more different fruits than any other pectin.
- Gives product resiliency to avoid breakage during shipping.
- Improves spreadability of jams, jellies and preserves.
- Standardized to uniform strength so that product always has the same consistency.

Write, wire or phone for full information, technical advice, or location of nearest warehouse.

SPEAS COMPANY

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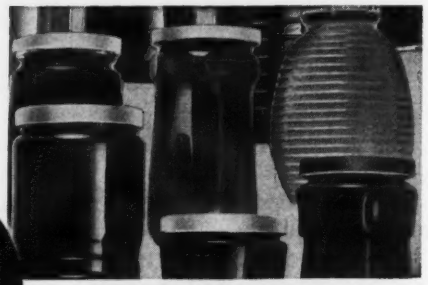
GENERAL OFFICES • KANSAS CITY 20, MO.



NUTRL-JEL

Regular and Slow Set
For Finest Jams, Jellies and Preserves

6227 on Reader Service Slip.

ingredients

Bacon-like flavor seasoning also adds nutrients

Bacon-like flavor seasoning, to be used with a variety of foods, carries the entire vitamin B complex, 50 per cent protein and all the essential amino acids.

Bacon-like flavoring ingredient is made from genuinely hickory-smoked USP torula yeast

Flavoring has application for use in cheese processing, soups, baby foods, etc.

Ingredient is a genuinely hickory-smoked USP dried torula yeast which is salt-free and contains no starch, sugar or meat. It is stable and uniform.

Product is shipped in standard 150-pound drums or smaller quantities.

(Complimentary sample, price list and further information on Bakon Yeast Flavoring is available from Lake States Yeast and Chemical Division, St. Regis Paper Company, Dept. N, Rhinelander, Wis.) 6228 on Reader Service Slip.

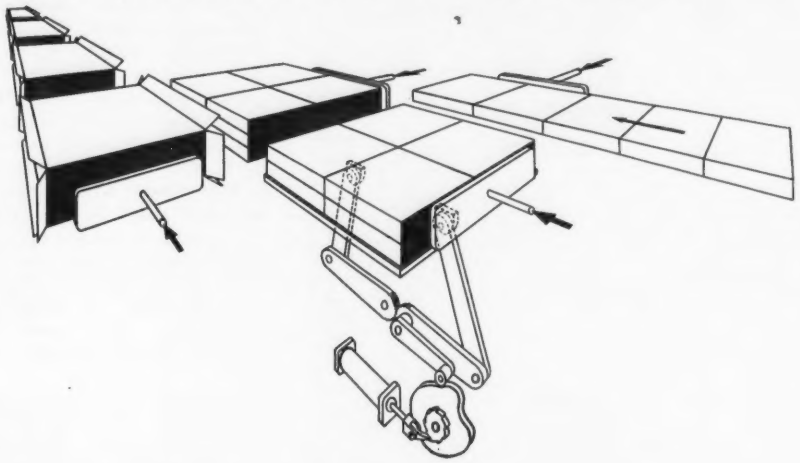
Packages come off the line (right) into machine's "package arranging" section. Here, pusher (top center) pushes the packages off the line, setting up one layer of four packages, arranged two-by-two.

Elevator (foreground) then indexes down, allowing pusher to set up a second layer and then a third layer of four packages each.

Meanwhile, the shipping carton is being formed from blanks in the "set up" section of the combination machine.

The set-up carton (left) reaches the loading station as a 12-package "miniature palletload" is completed on the indexing elevator. Pusher transfers the 12-package unit into the waiting shipping carton.

Loaded carton then is carried through the gluing, folding and compression stages.



Automatically end-loads flat food packages in case-load 'units'

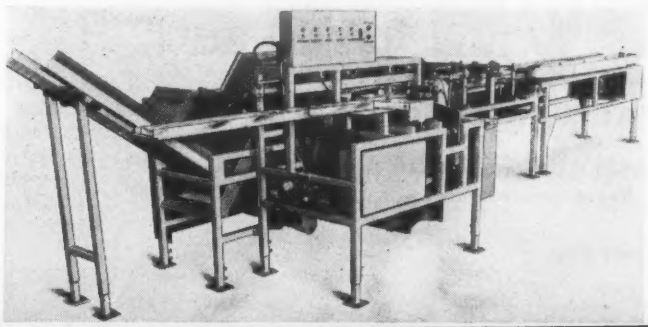
NEW automatic case packer arranges flat food packages, such as "English-style" butter cartons, into three-layer, 12-package loads, then fills these "miniature palletloads" into shipping cartons simultaneously being fully formed from blanks on another part of machine.

Developed to take advantage of the convenient unloading and marking features provided by the "easy top-open" and "easy end-open" cartons, unit provides economies of rapid, automatic package inserting and at same time loads cases so as to give the desired flat-pack, top-up arrangement.

Besides complete controls and safety devices, machine has such unique construction features as welded square steel tubing for the frame, removable gluing parts, fully enclosed motors, watertight wiring and plug-in limit switches.

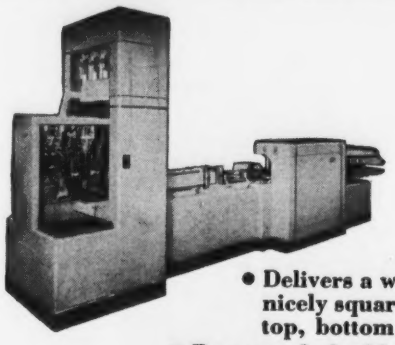
(Automatic case former-packer is development of Thiele Engineering Company, 556 Seventh Ave. N., Minneapolis 11, Minnesota.)

For more information circle 6229.



Machine is available for either 12- or 24-unit packs, and for any arrangement of packages within the case

Cut Costs with SEALTITE



- Delivers a well settled, nicely squared bag at top, bottom and sides
- Pre-scored, double fold, uniformly glued seal keeps product in and dirt out
- Uses any standard make of gusseted bag — no royalties
- Seal readily opened, yet tamper-proof
- Seals 30 to 50 bags per minute
- Users report costs reduced up to $500.00 per month per machine

Write for complete information

CONSOLIDATED PACKAGING MACHINERY CORP.
A Subsidiary of International Paper Company
BUFFALO 13, N.Y.

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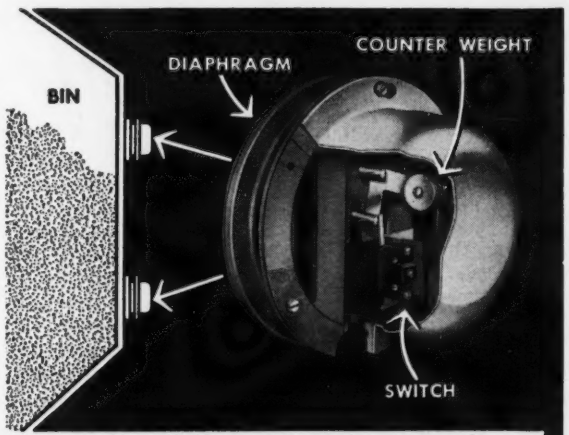


BIN-DICATOR® PAYS FOR ITSELF FIRST TIME IT PREVENTS BIN OVERFLOW, CONVEYOR CLOG, ELEVATOR CHOKE-UP, MACHINERY DAMAGE, REPAIR SHUT-DOWN

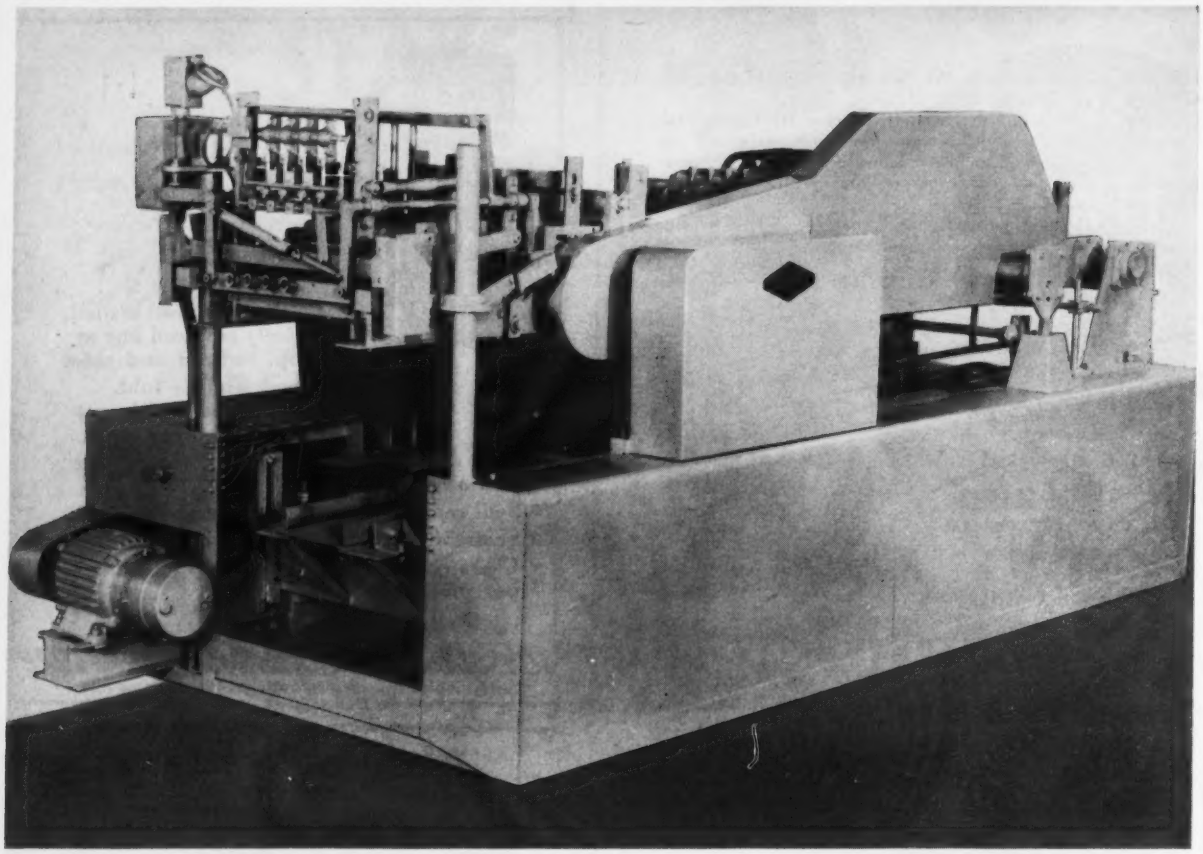
If you handle bulk material you probably need Bin-Dicators. The nominal cost of this protection and automatic control makes it the lowest-cost modernization you can buy. Available with Explosion-Proof Switch.

THE BIN-DICATOR CO. *Write for free copy of catalog BD-15 or call*
13946-C Kercheval • Detroit 15, Mich. Valley 2-6952

WE SELL DIRECT • PHONE ORDERS COLLECT

6231 on Reader Service Slip.

NEW! . . . from ATKRON DUMORE



Continuous Motion Case Packer

Interchangeable heads pack all bottles or cans in single or multiple layer cases!

- FAST—Packs up to 30 cases per minute
- NO COMPRESSED air required
- POSITIVE PACKING CONTROL—Any irregularity in supply of bottles, cans or cases automatically delays packing drop until corrected by machine itself or operator
- SIMPLE OPERATION—Requires only casual attention of one man
- COMPACT—Small space requirements compared to machine
- ELIMINATES bottle or label scuffing
- EASY CHANGEOVER for different bottles or cans (sizes and packs) can be accomplished in only 20 minutes
- ADAPTABLE TO PLANT LAYOUT — Fits all standard conveyors at standard conveyor heights
- LOW INITIAL COST and minimum maintenance

to cut your uncasing costs . . .

ATKRON DUMORE FULL RANGE HALF DEPTH BOTTLE UNCASER

. . . Automatically uncase, align and orient new cans ready for filling
. . . Adaptable for cans received in reshipper cartons, shipper trays, bags or bulk
. . . Speeds up to 1200 cans per minute with casual attention of only one man
. . . Models to handle all standard cans—6 oz. to 5 quart; cone top, screw cap and pressurized cans; rectangular, square and most specialty can styles.

Check other ATKRON DUMORE Equipment: Full depth and half depth Uncasers, and Four Flap Case Openers. Write for complete information . . . it can easily make the difference between profit and loss in your plant.

ATKRON DUMORE

MANUFACTURED BY ATKRON, INC., CUYAHOGA FALLS, OHIO

Distributed and Serviced exclusively by GEO. J. MEYER MANUFACTURING CO. MILWAUKEE, WIS.

and ECONOMIC MACHINERY CO. WORCESTER 3, MASS.
Division of Geo. J. Meyer Manufacturing Co.

6232 on Reader Service Slip.

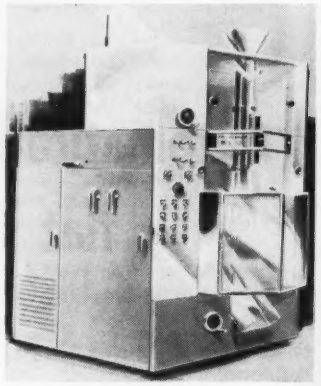
Fully automatic bag forming, filling, sealing machine combines

Wide size range with high speed

Uses: New Transwrap S-750 is especially adapted to pouch packaging of frozen vegetables and candy products.

Features: Unit forms bags from three to 15 in. long, and two to 8½ in. wide at maximum rate of 75 per min. A simple screw adjustment determines bag length, and a handwheel regulates speed.

Changing from one bag width to another requires less than 15 min, as completely assembled size parts are quickly interchangeable.



Over-all machine height is only seven ft; floor-space dimensions are five ft by four ft

Description: Designed by Peter Muller-Munk Associates, prize-winning Pittsburgh industrial design firm, the S-750 represents trend toward functional styling of packaging equipment, bringing about machines that are safer, lighter, more economical, easier operating and easier to maintain.

For example, centralized electrical controls simplify machine operation, and a push-button control station adds operating convenience. The fully enclosed electrical controls cabinet is easily accessible.

Machine's clean-line design

(*Continued on page 76*)

GAYLORD POINTS OUT
MANY WAYS YOU CAN SAVE IN PACKAGING

Gaylord uses a sharp pencil to survey your *total* packaging operation—checks those hidden costs that are frequently more important than the price of the box.

If you demand increased production, improved protection and important savings in corrugated packaging . . . call in your G-man. He'll help you erase any packaging errors, leave an indelible mark on the credit side of the ledger.

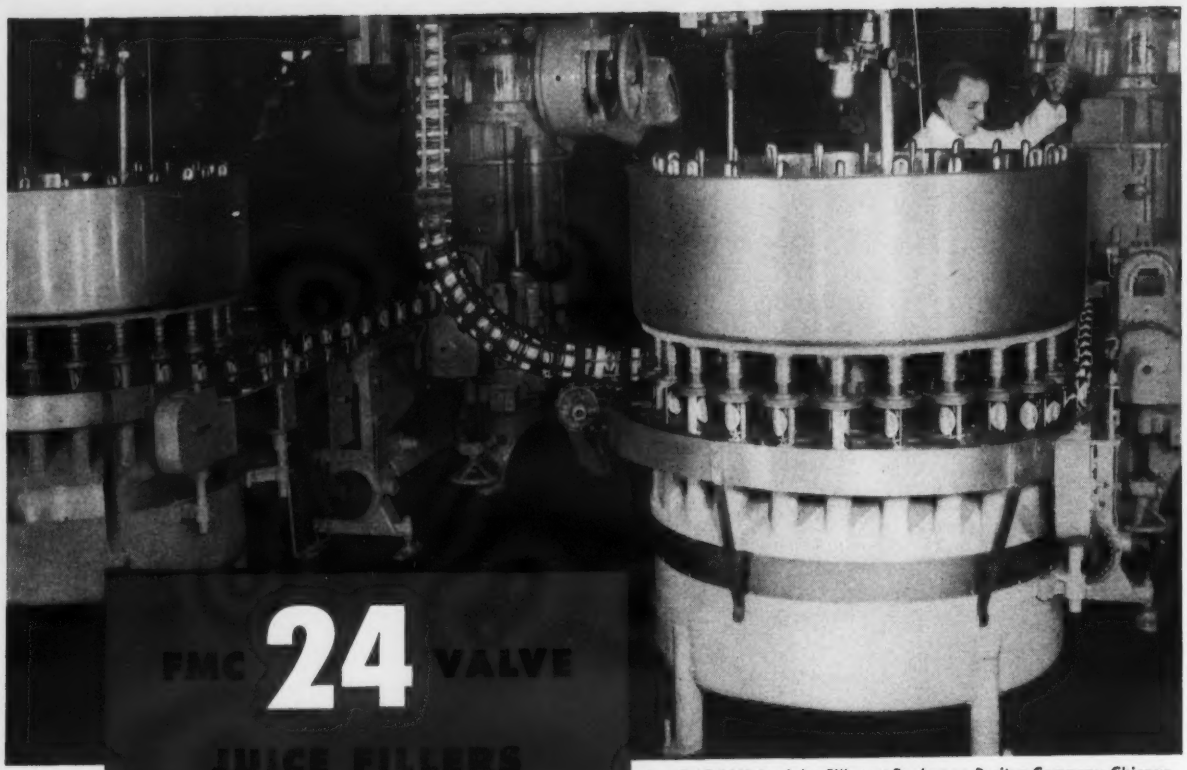
CROWN ZELLERBACH CORPORATION
GAYLORD CONTAINER DIVISION

Gaylord Boxes

IN CANADA • CROWN ZELLERBACH CANADA. LTD. VANCOUVER. B. C.

HEADQUARTERS. ST. LOUIS
PLANTS COAST TO COAST

For more information on product at right, circle 6233 see information request blank opposite last page.



Two FMC 24 Valve Juice Fillers at ReaLemon-Puritan Company, Chicago.

Upped Production 15% at ReaLemon on Canned Concentrates and Single Strength Juices

The popular FMC 24 Valve Juice Filler is designed specifically for high speed filling of concentrates and single strength juices, as well as other free-flowing liquids.

A wide selection of valves is available for handling any can size from 6 to 46 ounces. Capacities range up to 450 cpm on 6 ounce cans.

One of its many exclusive features is the FMC Automatic Lubricator, which pressure-pumps oil through an adjustable timing device to all key points. This does away with hand oiling, missed lube points, or any dripping, contaminating oil.

Smooth operation is provided by belt feed and worm timer to the feed turret, and by the tangential takeoff. Individual can lift tables open filling valves, acting as a "No can—No fill" device to eliminate spillage and waste. Level of fill is quickly set to the *exact headspace desired* by "micro-adjustment" controls on each valve.

Rigid and durably constructed, the machine's product contact parts are all of stainless steel, with the special bowl spun of stainless rather than welded.

The FMC 24 Valve Juice Filler is also available as a Syruper with a change of valves. FMC-M&S positive displacement Fillers are recommended for filling frozen juice concentrates.

Write for full information, or call your nearest FMC representative.

On exhibit at the 1960 Canners Convention, Booth No. 240

OTHER FMC FILLING EQUIPMENT

- FMC Pea and Bean Fillers
- FMC-M&S Plunger Type Fillers
- FMC Frozen Food Carton Fillers
- FMC Hand Pack Fillers
- FMC Syrupers
- FMC Soup Fillers
- Utility Fillers

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION
Canning Machinery Division
General Sales Offices:
WESTERN: SAN JOSE, CALIF. • EASTERN: HOOPESTON, ILL.

6234 on Reader Service Slip.

(*Continued from page 74*)

and rustproof construction aid maintenance. Elevated feet, adjustable from two to 12 in., permit easy cleaning. Sealed ball and roller bearings in central drive eliminate lubrication and avoid possible product contamination.

On all types of feed — auger, volumetric or Transwrap net weight feed — parts in contact with product are stainless steel or aluminum.

The machine runs polyethylene film and all other flexible, heat-sealing materials. Simplified paper feed and new plug-in end seal assemblies provide fast change-over from one film type to another.

(Transwrap Model S-750 automatic bag forming, filling, sealing machine is development of Package Machinery Company, East Longmeadow, Massachusetts.)
6235 on Reader Service Slip.

Interchangeably applies aluminum caps of various size and type

Features-Description: New type machine for applying aluminum closures 11 to 22 mm in diam has five sealing heads that are interchangeable for Stericap, Pilferproof or RO (roll-on) cap application.

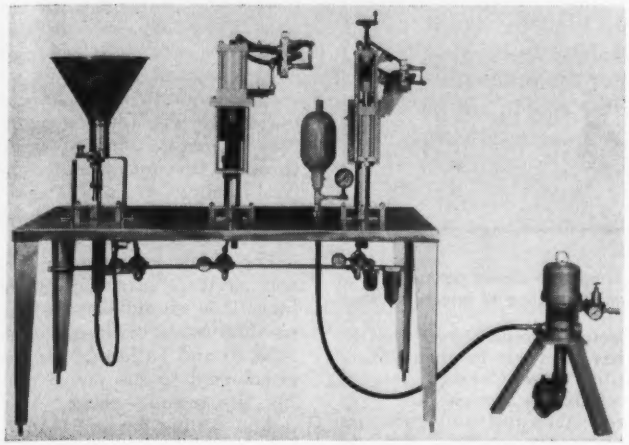
Depending on shape of container and type of product, machine can cap up to 250 bottles per min. Bottle neck diameters from one-quarter in. to 2¾ in. can be capped with a variety of closures.

Equipment is designed for rapid change from one bottle size to another. Bottles ranging in height from 2¼ to nine in. can be accommodated.

Machine is easy to clean, and can be used with a floor-stand hopper for fully automatic operation.

(RK Closure Machine is development of Aluminum Company of America, 1501 Alcoa Building, Pittsburgh 19, Pennsylvania.)
6236 on Reader Service Slip.

Low-cost, self-contained aerosol packaging line



DESIGNED primarily as a regular production line for the small-volume manufacturer or processor, semi-automatic aerosol packaging line also has potential as an auxiliary for pilot runs by a large-volume filler.

Completely self-contained "unit" requires only electric power, product and propellant — is capable of producing up to 600 cans per hr. It is composed of a piston filler, a vacuum crimper and a pressure filler (0 to 300 gm) — shown left, center and right in photo.

Price is in the $6000 to $7000 range, which compares with the approximately $20,000-and-up cost of completely automatic lines. Even if equipment is amortized over only five yr, cost figures of three to four cents per can are considered realistic.

(KP-1000 semi-automatic aerosol packaging line is development of The Kartridg Pak Company, 9151 W. Fullerton, Franklin Park, Ill.)
6237 on Reader Service Slip.

Applies header labels at packaging machine speeds

Fully automatic attachment gives new flexibility to packager of private label products

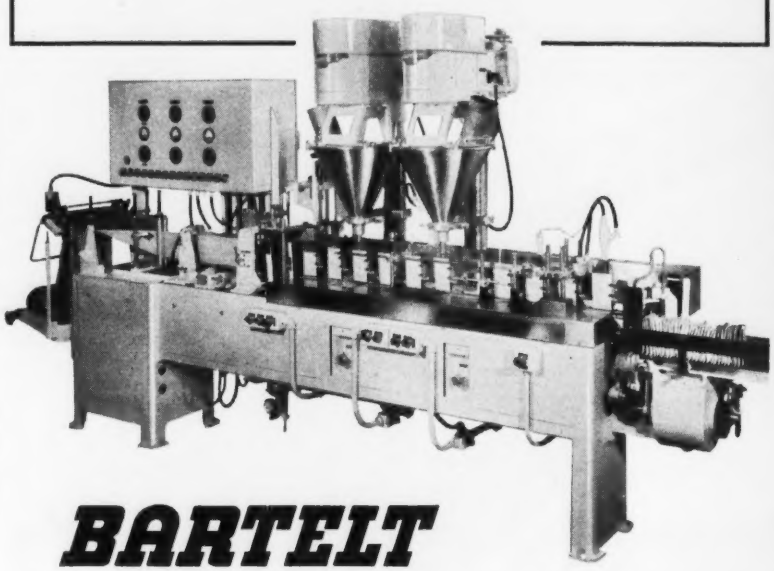
Photo shows samples of food packages now being produced on Compak with header label attachment

Features: New header label attachment for line of Compak automatic packaging machines automatically feeds and indexes label from roll stock and attaches it to the formed film as it pauses on the filling tube.

(Compak unit forms "tube" of flexible film over a vertical, hollow metal tube, fills a measured amount of product, then heat-seals filled portion of film "tube" to form individual pouch. These coordinated steps take place in rapid succession.)

(*Continued on next page*)

ENGINEERED PACKAGING PROTECTION



BARTELT

Packaging Machinery Has Built-In Versatility to Meet Changing Market Requirements . . .

PROTECTION . . . for changing package sizes and products. The Bartelt Packager can be tooled to handle a variety of products and a wide range of package sizes.

PROTECTION . . . for your product. Pouches can be made from inexpensive webs or the finest barriers depending on product shelf-life requirements.

PROTECTION . . . against high labor costs. Completely automatic from roll stock to finished package.

PROTECTION . . . against maintenance problems and excessive down-time losses. Bartelt's straight-forward design and rugged construction assure efficient operation.

● **Write Today for Bartelt Brochures**

BARTELT ENGINEERING COMPANY
1900 Harrison Ave., Rockford, Ill. • New York Office: 370 Lexington Ave. N.Y.C.

6238 on Reader Service Slip.

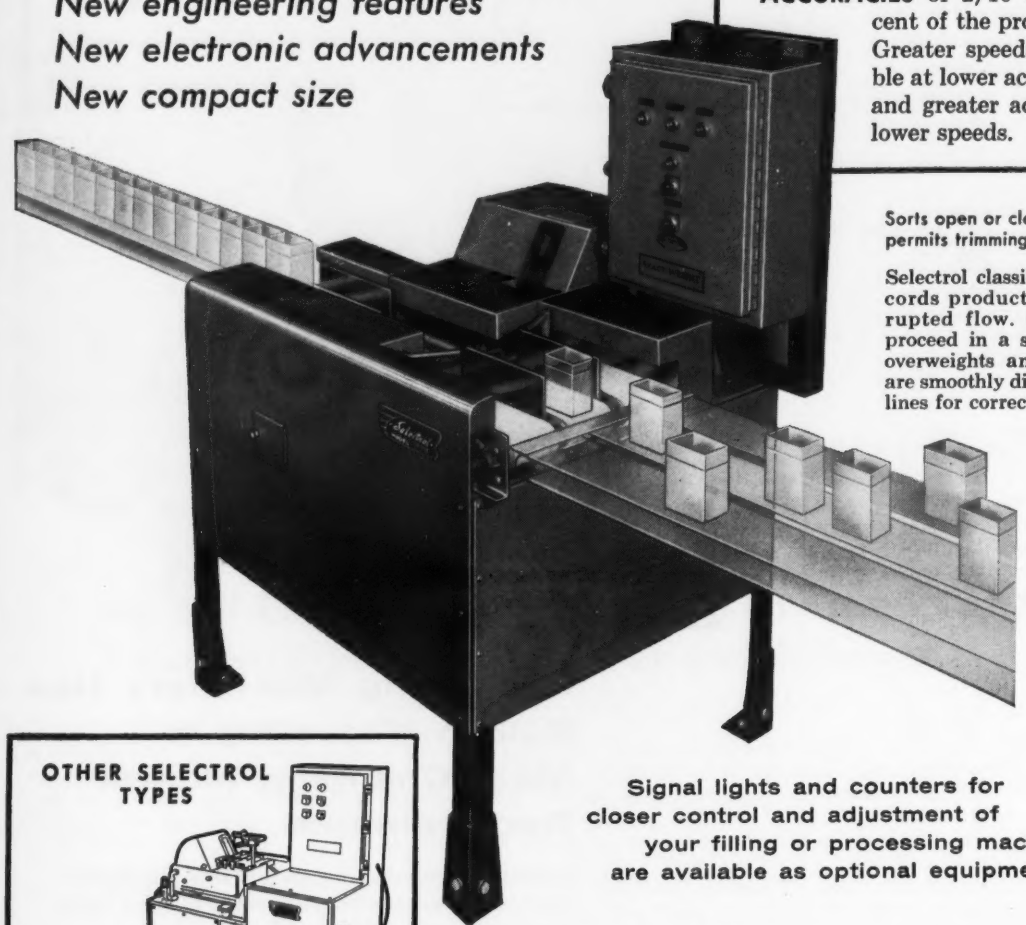
Exact Weight's New Automatic Checkweigher

New engineering features
New electronic advancements
New compact size

SELECTROL®
TYPE 1206

SPEEDS up to 120 weighings per minute.

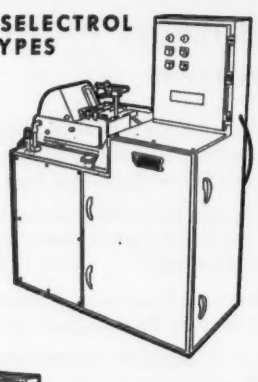
ACCURACIES of 2/10 of one percent of the product. Greater speeds are possible at lower accuracies . . . and greater accuracies at lower speeds.



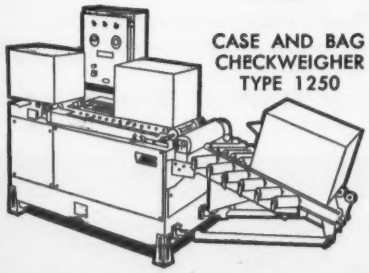
Sorts open or closed packages . . . permits trimming of rejects

Selectrol classifies, sorts and records products in an uninterrupted flow. Correct weights proceed in a straight line flow, overweights and underweights are smoothly diverted to separate lines for correction or trimming.

OTHER SELECTROL TYPES



TYPE 1245



CASE AND BAG CHECKWEIGHER TYPE 1250

Signal lights and counters for closer control and adjustment of your filling or processing machines are available as optional equipment.

This new Selectrol Checkweigher, field tested and proven, is engineered to maintain the highest degrees of accuracies with relation to realistic speed requirements of most production lines. Operation is completely automatic. Tolerances are adjustable.

Selectrols are made by Exact Weight, a manufacturer of scales for 45 years, with experience gained through hundreds of checkweighing installations during the past 18 years in 28 states and in foreign countries. Write today for complete information on Selectrol and the advantages it can offer you.

THE EXACT WEIGHT SCALE CO.
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In Canada: 5 Six Points Road, Toronto 18, Ont.

Exact Weight SCALES

Sales and Service Coast to Coast

Find us in your local 'Yellow Pages'

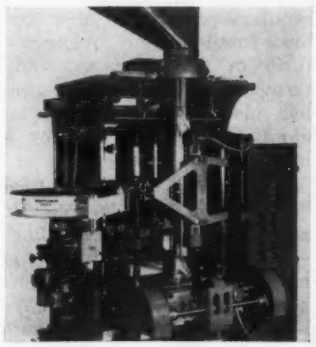
6239 on Reader Service Slip.

(*Continued from preceding page*)

Attachment frees two operators from time-consuming job of separately handling and feeding the pouches through the semi-automatic labelers now in common use. Changing label rolls is a quick and simple operation.

Description: After attachment, label is pulled down the tube as film is advanced through the machine to the final sealing stage. The sealing jaws heat-seal the label as they seal the pouch.

The label is cut from the roll as it is attached to the film. This eliminates the curl so often found in die-cut single labels, and affords positive attachment to the pouch during the sealing phase. Accidental double feeding is eliminated.

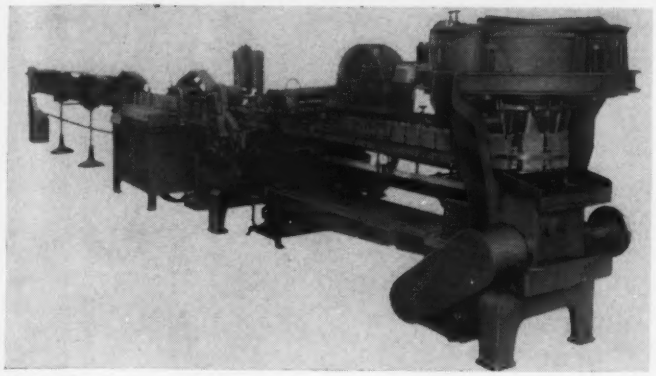


Completely automatic labeler unit (left) works at speed of machine to which it is attached

New header label attachments are available for installation on existing Compak machines, and may be ordered as an accessory on new equipment. Cost is about same as for semi-automatic labelers now on market.

(New automatic header label attachment for Hayssen Compak automatic packaging machines is development of Hayssen Manufacturing Company, 13th & St. Clair, Sheboygan, Wis.)
6240 on Reader Service Slip.

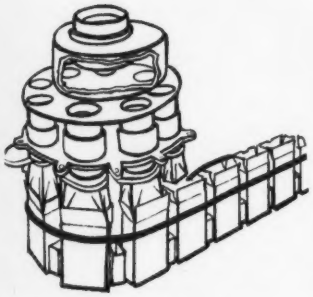
Check page 101 for helpful technical literature



Comprehensive weighing-filling-sealing system eliminates wide fluctuations in filling accuracy at high speeds

"Built-in" electronic checkweigher that feeds back fill data permits

Precise, high-speed fill of products with varying densities



Volumetric filling method has proved highly satisfactory for filling such food products as cereals, salt, dried vegetables and raisins.

Method is based on mechanically measuring volumes of product by means of adjustable, telescoping pockets arranged at edge of a revolving filling head.

A machine hopper, equipped for controlled pressure, fills each pocket with exact amount of product required for a single carton.

As filling head revolves, empty bottom-sealed cartons move continuously into place beneath the pockets, which automatically discharge the measured product into the cartons.

Equipment is extremely easy to maintain, assuring day-in-day-out operation with absolute minimum of down time.

IMPROVED filling accuracy for products with varying densities is possible with new automatic carton filling and sealing system that combines volumetric filling with a "built-in" electronic checkweigher equipped to feed back overfill and underfill data in the form of automatic adjustments on the filling head.

Formerly, when variations in product density occurred, packages would leave filling head either overfilled or underfilled. An attendant, spot-checking package weights, would note variation and would then return to the filling head and adjust volume accordingly.

Using hand-wheel, attendant would increase or decrease volume of individual telescoping pockets on filling head.

Now, with checkweigher integrated into filling-sealing unit, this adjustment is made automatically, as follows:

When changes occur in density of material, resultant overweight or underweight

(*Continued on page* 82)

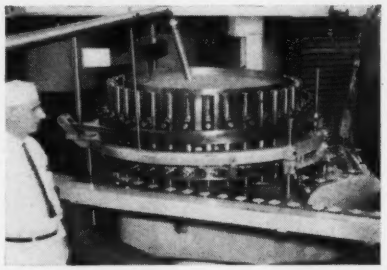
FLUIDICS* AT WORK

From mite to mighty . . . fill them all with Pfaudler fillers

Whatever size your container . . . #211 x 101.5 can or gallon; whatever your product . . . a spread like deviled ham or lightly fluid antifreeze, a Pfaudler rotary piston filler will handle it for you fast, at low cost and without spill.

The Wm. Underwood Co. at Watertown, Massachusetts, uses a Pfaudler RP-35 filler to package over 500 cans of viscous deviled ham a minute. Accuracy is held to ±1/10 fluid ounce—thus cans come off the filler clean.

A Southwestern petroleum manufacturer fills antifreeze at 60 to 80 *gallon* cans a minute using a seven-station Pfaudler machine. Similar results are common in citrus, soup, syrup and evaporated milk plants.



Underwood Deviled Ham is filled at a rate of over 500 cpm, using this Pfaudler 35-station rotary piston filler.

Simplicity of design is the all-important characteristic of Pfaudler fillers. Low maintenance—only four primary wearing parts. Fast cleaning—one man does a thorough job in just 30 minutes. High accuracy—precision adjustment even at full operating speeds. No product loss . . . positive acting no can-no fill mechanism.

For more information, write to our Pfaudler Division, Dept. **FP-10,** Rochester 3, New York. Or contact your Pfaudler representative.

*FLUIDICS is a new Pfaudler Permutit program that provides a modern, imaginative approach for handling and processing liquids and gases more profitably.

PFAUDLER PERMUTIT INC.

Specialists in FLUIDICS . . . the science of fluid processes

6241 on Reader Service Slip.

"Comparison has proved it!"

VERDICT

THE WORLD SUPER C.M. HAS NO EQUAL!

Prospective customers of glass labeling machinery are like prospective customers everywhere . . . they want to be sure they're right even *after* they buy. Recently several owners of the versatile Super C.M. labeler have been approached by competitive machinery manufacturers who offered to put in their equipment on a "trial" basis.

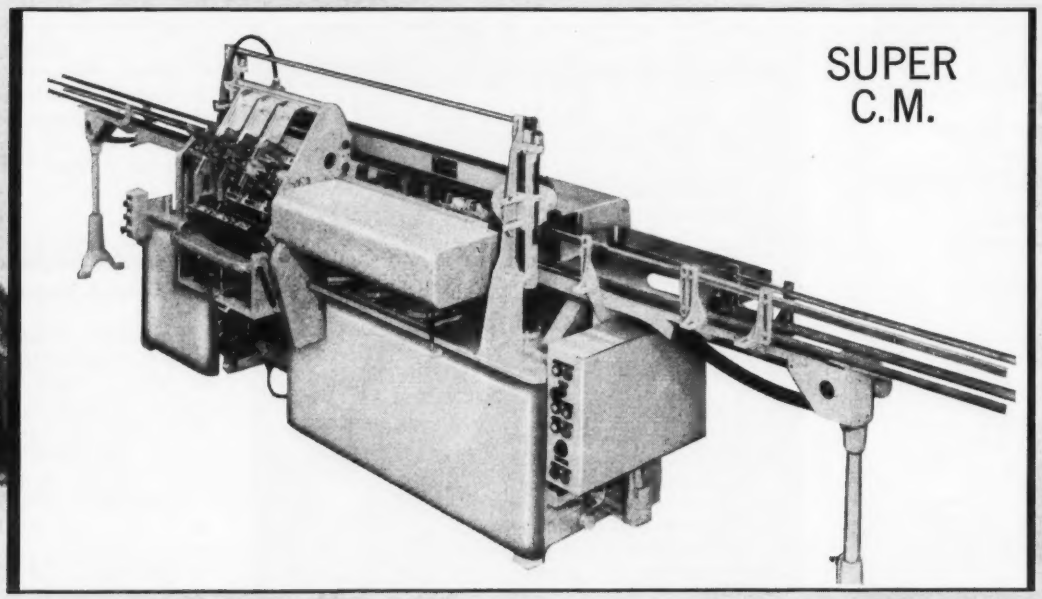
"Why not?" they agreed . . .

Result? . . . hands down proof that the WORLD Super C.M. is by far the most versatile high speed labeler ever used!

In test after test it outperformed each and every competitive machine. The Super C.M. was so superior in operating efficiency against any competitive machine, that there was no real basis for comparison. Proof . . . that performance is the only true measure of machine worth.

There is a substantial price differential between the Super C.M. and the competitive labeling equipment offered in these trials, but an operating efficiency of better than 10-15%, more than offsets this investment.

We will be glad to show you factual proof of Super C.M. performance. Better still . . . let us tell you what this unit can do for your packaging line.



Good Labeling *Sells!*

WORLD LABELERS

ECONOMIC MACHINERY COMPANY • WORCESTER 3, MASS. / Division of Geo. J. Meyer Manufacturing Company

World's Largest Manufacturer of High-Speed Labeling Machinery

For more information on product at left, circle 6242 see information request blank opposite last page.

(*Continued from page 79*)

cartons are immediately noted by checkweigher, and the faulty cartons rejected from the line before seals are firmly set in the drying conveyor.

In addition, checkweigher is continuously collecting and averaging package weights. Thus, average of the overweight or of the underweight fill is noted by checkweigher, and this average is fed back to rotating filling head in form of *automatic* adjustment of the telescoping pockets.

Result of system is that every package is taken into consideration, filling accuracy is increased and speeds up to 400 packages per min are possible (depending upon model of machine and size and weight of package).

Cartons of practically every type can be handled, from small one-oz to three-lb sizes, with dimensions from 2⅜ in. wide by 3⅝ in. high, to 8 in. by 11 in.

(New "Neverstop" automatic carton filling and sealing system, with "built-in" electronic checkweigher, is development of Food Machinery and Chemical Corporation, FMC Packaging Machinery Division, 4900 Summerdale Ave., Philadelphia 24, Pa.)
6246 on Reader Service Slip.

Automatic bagholder ups output, stops dust

Features: Dust-tight closure is applied to lip of bag to prevent dust from flying up as material is discharged. Foot-pedal air operation leaves operator's hands free, thus stepping up productivity.

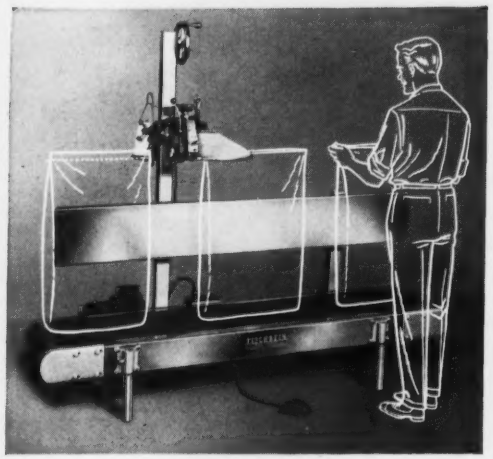
Description: New bagholder is adapted to the company's semi-automatic G-17 Gross Bagger and the GA-17 Gross Bagging Scale.

Both of the units have oval bag spouts and are designed for filling either open-mouth textile or multiwall paper bags with capacities in the 10 to 140 lb range.

(Automatic bagholder is manufactured by Richardson Scale Company, Clifton, N.J.)
6247 on Reader Service Slip.

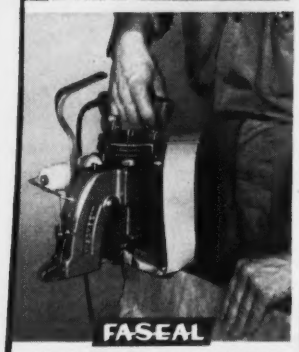
FISCHBEIN LOW COST EFFICIENT

BAG CLOSING EQUIPMENT



AUTOMATIC MODEL BA-6
Bags start the sewing operation when they reach the head. After sewing, thread is cut automatically and conveyor belt continues to move bag. Instantaneous start/stop controls.

FISCHBEIN *Portable* BAG CLOSER MODEL C



FASEAL
TAPE BINDING ATTACHMENT
- Produces perfect tape-bound closures.
- Complete portability maintained.
- Can be quickly removed when tape-binding is not required.

- Total weight, only 10½ pounds.
- Requires no installation, supports or plant space . . . merely plug into any electrical outlet.
- Handles all textile and paper bags.
- Closes average 100 lb. bag in less than 6 seconds.

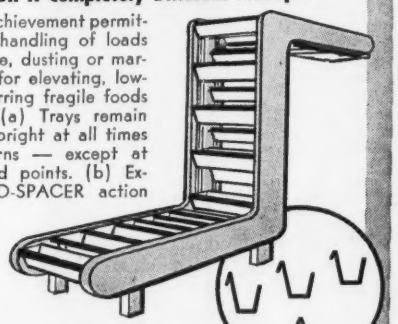
Write for complete Catalog File of Bag Closing Equipment.

DAVE FISCHBEIN CO.
2730 30th Ave. S., Dept. 2A
Minneapolis, Minn., U.S.A.

6243 on Reader Service Slip.

New! Gentle-Action Food Elevator
ECON-O-LIFT
Operates On A Completely Different Principle

A remarkable achievement permitting the rapid handling of loads without breakage, dusting or marring . . . ideal for elevating, lowering or transferring fragile foods and materials. (a) Trays remain separated and upright at all times — even at turns — except at load and unload points. (b) Exclusive ECON-O-SPACER action moves trays together into interlocking bank at loading point — no spillage between trays ever. (c) Trays turn upside-down **only at unloading point** for dumping, quickly return to horizontal for travel—no fallout at turns. Available in any height or length, with the type of tray or bucket to suit **your** requirements. All these ECON-O-VEYOR advantages at great savings in cost!



Distributed Nationally By
Creamery Package Mfg. Co., Inc.
offices in major cities in U.S. & Canada
Or Write For New Descriptive Literature:

ECON-O-VEYOR
224 Glen Cove Ave., Glen Cove, N. Y. INdependence 1-3360

6244 on Reader Service Slip.

NOW FROM WESTON
THE NEW '4000' SERIES
heavy duty bi-metal thermometers

RIGHT
for all installations requiring the ultimate in serviceability, long-term accuracy and ruggedness.

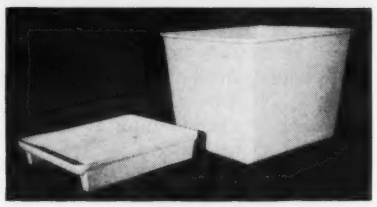
WRITE
for new literature giving complete details on the construction and performance of the '4000' bi-metals. See your local distributor or write to:

Daystrom-Weston Sales Division, Newark 12, N. J. *In Canada: Daystrom Ltd., 840 Caledonia Rd., Toronto 19, Ont. Export: Daystrom Int'l., 100 Empire St., Newark 12, N. J.* Or contact your local Weston representative.

WESTON
A DAYSTROM UNIT
Bi-metal Thermometers
WORLD LEADER IN MEASUREMENT AND CONTROL

6245 on Reader Service Slip.

Complete bin, shown in large photo, consists of bin body (right in small photo) bonded to base under high temperature and pressure. Legs and Neoprene rubber foot pads complete the assembly



For in-plant handling and transport . . .

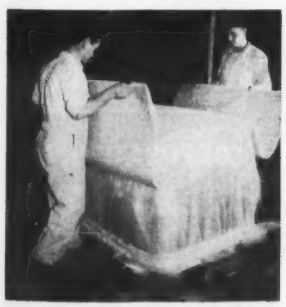
Lightweight bins hold heavy loads

Fiberglass-reinforced plastic bins that weigh only 130 lb empty, yet hold up to 3000 lb of material, are solving a major food industry need for durable containers for in-plant handling.

Developed originally to solve material handling problems of the meat industry, bins offer a combination of strength, light weight and ease of handling that makes them ideal for sorting, shipping or storing materials in other food processing operations as well.

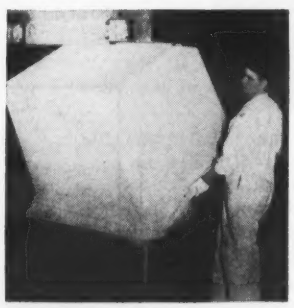
More than 1000 already are in use or

(Continued on next page)



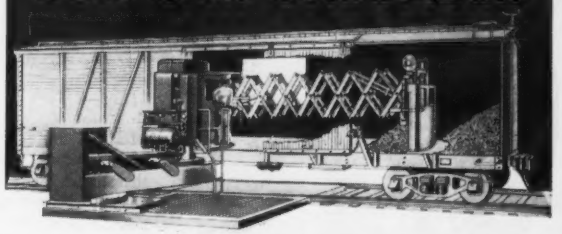
◀ Workers lay polyester-impregnated fiberglass over fine-texture inner-surface layer. Material is overlapped at corners to provide double strength at stress points

After 15 min of high pressure and temperature in 250-ton press, materials flow together into the smooth-surfaced "cooked" container being removed ▶



FAST . . . EFFICIENT CAR UNLOADING AT LOW COST PER TON WITH A STEPHENS-ADAMSON

BOX CAR UNLOADER



CHECK THESE FEATURES

- Lower original and operating costs than rotary or tilting car dumps.
- Operates on single or double parallel tracks.
- Unloader movements power operated and controlled by one man.
- Granular, pulverized or small lump materials unloaded fast and efficiently.
- Natural digging and raking scoop action assures maximum unloading economy.
- Hydraulically actuated boom swivel and scoop motion automatically operated during much of unloading cycle freeing operator for other duties.

S-A

WRITE FOR BULLETIN 158

STANDARD PRODUCTS DIVISION
STEPHENS-ADAMSON MFG. CO.
17 RIDGEWAY AVENUE • AURORA, ILLINOIS
PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA
CLARKSDALE, MISSISSIPPI • BELLEVILLE, ONTARIO

6248 on Reader Service Slip.

Kewanee HYDRAULIC TRUCK DUMPERS

WILL ENABLE YOU TO HANDLE INCOMING BULK MORE EFFICIENTLY

Your Production Will Flow with Greater Speed and Smoothness

KEWANEE'S unload any size truck or trailer in one to two minutes. They're made in 4-sizes, scale or non-scale types. The load can be weighed in — dumped a moment later and vehicle reweighed with accuracy. Gives you better control of incoming materials.

"KEWANEE" is the Pioneer Truck Dumper — 40 years young. Many exclusive features assure finest performance. 50 ft. Dumper shown is unloading pulp chips in a paper mill.

Periodic Inspection Service is available to Kewanee users wherever located. Your Dumper is never an orphan after you buy it.

Let us engineer a Kewanee into your layout. Write for details.

Screw Conveyor Corporation
701 HOFFMAN STREET • HAMMOND, INDIANA
WINONA, MISSISSIPPI SANTA CLARA, CALIFORNIA

6249 on Reader Service Slip.

the Proven, Efficient MEYER *Pneumatic*

SEPARATOR

way!

MEYER PNEUMATIC SEPARATORS are in daily operation in plants throughout the world, where they are cleaning and separating such diversified products as Dried and Green Beans, Coffee Beans, Peas, Rice, Seeds of all kinds, Grains, Spices, all varieties of Edible Nuts, Vegetables, Raisins, Tea, and many others.

Available in Single or Double Units with Cyclone Head (as shown) or open type Mesh Heads, in capacities ranging from 1,000 to more than 10,000 pounds per hour.

MEYER MACHINE COMPANY

P. O. Box 5096 • SAN ANTONIO 1, TEXAS

DESIGNERS AND MANUFACTURERS OF SIMPLEX CONVEYING ELEVATORS, • BUCKET ELEVATORS • VIBRA FLEX CONVEYORS, FEEDERS AND HOPPERS, INSPECTION TABLES AND SIZING MACHINES • BATCH DRYERS AND COOLERS AND A COMPLETE LINE OF EDIBLE NUT CONVEYING AND PROCESSING EQUIPMENT

Write for Bulletin 808

6250 on Reader Service Slip.

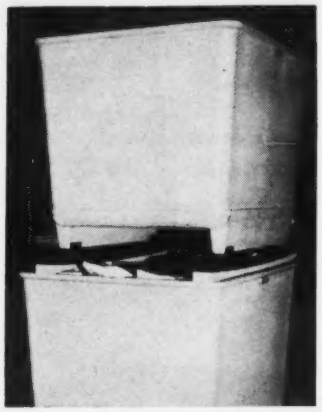
need more information . . .

Note there is a key number at the end of editorial articles or advertisements. To request more information circle the proper number on the convenient form opposite the last page. Send the form to us . . . we do the rest. Information comes direct to you. No obligation, of course.

(*Continued from preceding page*)

have been ordered — as replacements for unsanitary brine barrels. They have been approved by the Meat Inspection Division of USDA and by American Meat Institute.

Bins consist of a plastic body that is completely water- and moisture-resistant, bonded to a separate base.



In this meat-packing application, two two-by-four's placed atop lower bin provide stacking base for upper bin

Bodies are equipped with a drain hole and plug; smooth inner surfaces permit easy steam-cleaning at atmospheric pressures.

Bins are designed for normal production handling with fork or bed lift trucks, and come with 5-, 7½- or 9½-in. legs. Extra reinforcement at all critical points, especially at upper rim and at base, make bins rugged for heavy-duty use.

Dimensions are 48 in. long, 41½ in. wide and 36 in. deep, capacity by volume is 33½ cu ft or 260 gal.

(Fiberglass-reinforced plastic bins are development of Goodyear Aircraft Corporation, Akron 15, Ohio.)
6251 on Reader Service Slip.

CORRECTION!

In December FP, article on all-magnesium pallet dollies of Magline, Inc. (pp 95-96) mistakenly stated that the dollies had "welded aluminum channels." This should read: "welded magnesium channels."

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Get the Latest Data
DARNELL CASTER & WHEEL MANUAL
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CASTERS & WHEELS
ASSURE TOP PERFORMANCE AND DEPENDABILITY
If you want maximum floor protection, economy and efficiency Demand Darnell Dependability...
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36 NORTH CLINTON STREET, CHICAGO 6, ILLINOIS

6252 on Reader Service Slip.

Plants, Companies, Personalities

Truesdail Laboratories

Los Angeles, announces appointment of Dr. Lloyd A. Hall, noted food scientist, to the company's research advisory board. Dr. Hall, who recently moved to Pasadena from Chicago, where he was technical director of the Griffith Laboratories, will be called into consultation whenever an unusual project for a Truesdail client calls for certain highly specialized technical knowledge in the food or drug field.

Dr. Charles R. Stumbo

for many years with H. J. Heinz Company, Pittsburgh, announces opening of a consulting practice for the food processing industry at Route 2, Overbrook, Kansas. Dr. Stumbo already has been appointed by Chemo Puro Manufacturing Corporation of Newark, N.J., as their consultant for applications of Chemocides "MK" and "PK" as microbial inhibitors in connection with food products.

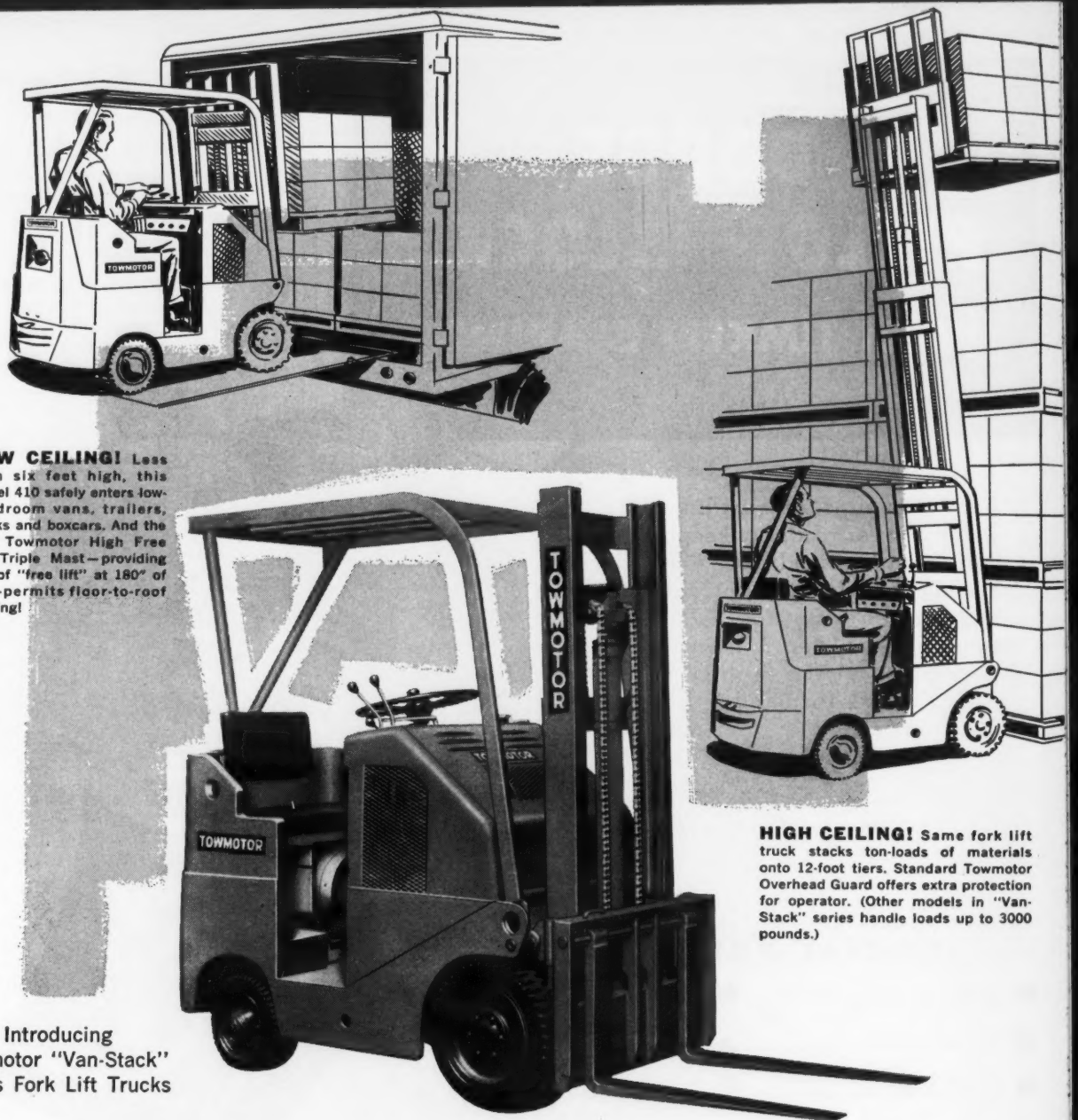
Hawaiian Pineapple Company

San Jose, Calif., plans to change its name to one featuring the word "Dole." Company directors will select the new name at quarterly meeting next month, and selection will be submitted to stockholders in August. Name will be a general, non-limiting one that does not describe Dole solely as a food or canning company.

Green Giant Company

Le Sueur, Minn., has elected as vice president C. J. Tempas, director of production.

For more information on product at right, circle 6253 see information request blank opposite last page.



LOW CEILING! Less than six feet high, this Model 410 safely enters low-headroom vans, trailers, trucks and boxcars. And the new Towmotor High Free Lift Triple Mast—providing 65" of "free lift" at 180" of lift—permits floor-to-roof loading!

HIGH CEILING! Same fork lift truck stacks ton-loads of materials onto 12-foot tiers. Standard Towmotor Overhead Guard offers extra protection for operator. (Other models in "Van-Stack" series handle loads up to 3000 pounds.)

Introducing Towmotor "Van-Stack" Series Fork Lift Trucks

New Towmotor does double duty!

You'll profit in many extra ways by owning a new Towmotor "Van-Stack" Series Fork Lift Truck.

"Almost unbelievable—but I saw it!" said an amazed MHI Show-goer who witnessed this double-duty lift truck in action in June. Thousands saw it drive in low-headroom trailer, load it to roof, then stack heavy units on 12-foot high tiers.

This truck (only 32" wide) zips through congested 3-foot aisles—maneuvers sharp corners—hustles big loads indoors and out—and enters elevators for fast floor-to-floor service.

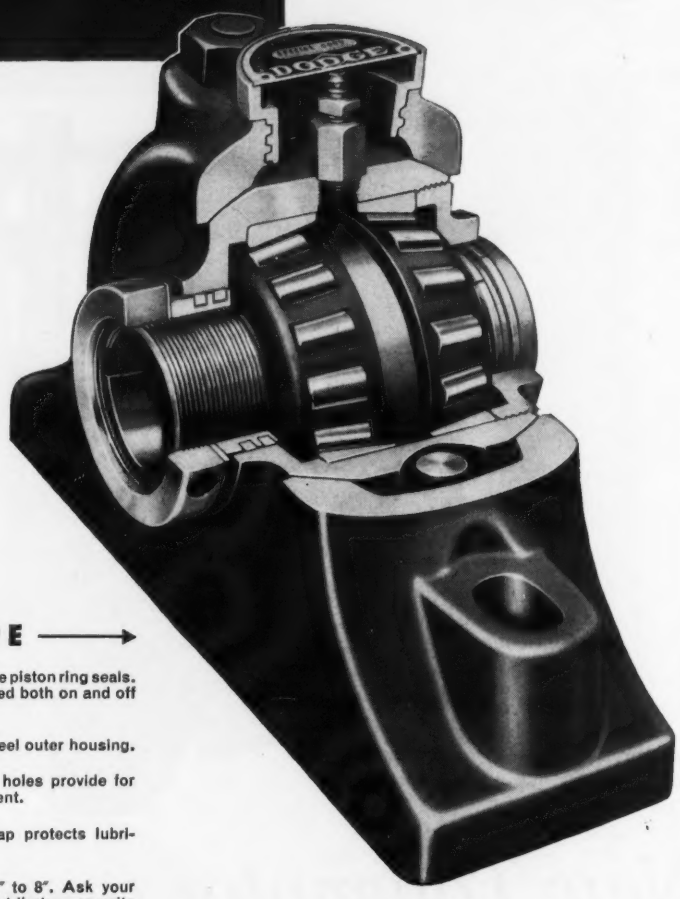
On top of all this, its increased hoisting speed, dual-entry convenience, powerful 4-cylinder "economy" gas or LP-gas engine, weatherproof instrument panel—and other exclusive Towmotor features—make it the foremost fork lift truck in 2000-3000 pound class! Ask for *"Van-Stack" Series Folder SP-25.* Write Towmotor Corporation, Cleveland 10, Ohio.

TOWMOTOR THE ONE-MAN-GANG® -GERLINGER LEADERS FOR 40 YEARS IN BUILDING FORK LIFT TRUCKS, CARRIERS AND TRACTORS

Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation

DODGE PILLOW BLOCKS WITH TIMKEN BEARINGS

America's super-quality line—with a 35 year record of keeping performance *up* and costs *down!* Five types—to fit practically any service condition. All assembled, adjusted, lubricated and *sealed* at the factory for precision performance—long life—dependability.



SPECIAL DUTY TYPE ⟶

- Designed for extreme precision and high load capacities.
- Fully self-aligning.
- Special Duplex Timken Roller Bearing with tapered bore.
- Split tapered sleeve with straight cylindrical bore extends through entire length of housing.
- Easy to mount or demount. Adapter nut (or collar) clamps adapter sleeve to shaft with extreme firmness.
- Automotive type piston ring seals. Bearing is sealed both on and off the shaft.
- Rugged semisteel outer housing.
- Elongated bolt holes provide for lateral adjustment.
- Special dust cap protects lubrication fitting.
- Shaft sizes 1¾" to 8". Ask your local Dodge Distributor—or write us for Bulletin A670 giving complete technical data on America's most complete line of mounted bearings.

DODGE MANUFACTURING CORPORATION, 2400 Union St., Mishawaka, Ind.

CALL THE TRANSMISSIONEER, your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

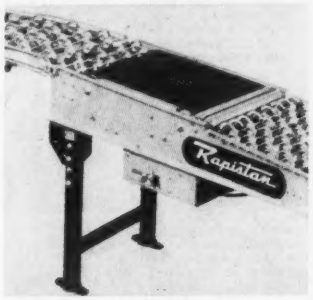
DODGE of Mishawaka, Ind.

6254 on Reader Service Slip.

material handling

Explains practical device for counting conveyed packages, regulating flow

Accurate unit counting, lot plus total registration, accumulation control and remote control activation are some of the useful Flow Control Register functions briefly described and illustrated in new four-pg folder.



Unit can easily be incorporated into any existing or any new conveyor system

Cited as "the beginning of numerical flow control," new electro-mechanical unit consists basically of power belt control, recording instrument, electro-mechanical trigger mechanism (which assures accurate registration of packages) and flow limit switch (which shuts off unit in event materials accumulate).

As individual units pass over the Register they automatically trigger an impulse that activates the desired numerical control.

Through use of accessories — such as remote reading station and a predetermined counter (used at any remote point to release predetermined number of items from the unit) — the basic Register can be set up to perform a number of control functions.

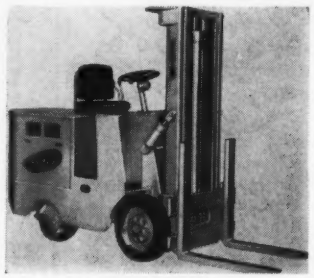
For handling unusual materials, such as paper bags, a power-acceleration accessory is available. Product application features and specifications also are covered.

(Four-pg literature folder on new Flow Control Register is available from The Rapids-Standard Company, Inc., 342 Rapistan Bldg., Grand Rapids 2, Mich.)
6255 on Reader Service Slip.

New Developments in fork lift trucks

For low-rated floors . . . and elevators, where, nevertheless, heavy-duty work must be accomplished, new rider-type electric is proving practical answer. For maneuverability, truck drives through 16-in. wheels in front, steers through 14-in. wheels in rear. Very low operator seating provides high dock clearances.

(Hustler STL Series electric lift truck, in capacities from 1000 to 4000 lb, is manufactured by The Heifred Corporation, Church & Elm Sts., Willoughby, Ohio.)
6256 on Reader Service Slip.



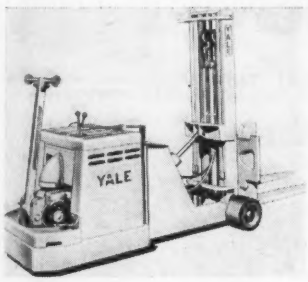
Smooth-as-silk travel . . . plus infinitely variable travel speeds, ultra-accurate "inching" and fast acceleration (full power is attained even at slow speeds, for safe starting on ramps) are among benefits provided by new lift trucks' carbon-pile speed control.

Additionally, common major sources of trouble — speed contactors, complicated master switches and resistance boxes — are eliminated, reducing maintenance.

Besides unique speed control, trucks feature remarkable maneuverability for their size. Right-angle stacking aisle is only 93 in. plus length of load; minimum intersecting aisle is under six ft.

Top travel speeds are eight mph; lifting speeds of a fully loaded truck exceed 40 fpm.

(New F-50T line of rider-type electric lift trucks, in 4000-, 5000- and 6000-lb capacities, and featuring new "Acro-Smooth" carbon pile speed control system, are manufactured by The Elwell-Parker Electric Company, 4205 St. Clair Ave., Cleveland 15, Ohio.)
6258 on Reader Service Slip.



Faster movement, less cost . . . is provided by new three-speed rider-walkie truck that combines a 6.3 mph top speed with economies in initial price and operating costs.

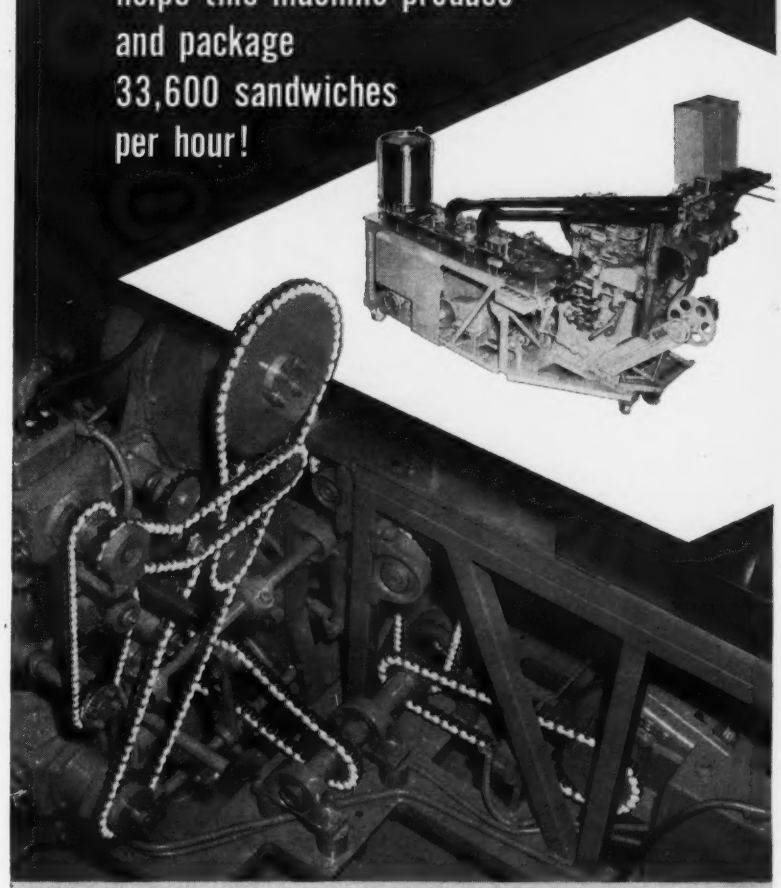
Simplicity of new series parallel motor and the single 12-volt battery with less expensive charger cut initial cost. Lower operating costs result from motor efficiency in all three speeds, reducing power losses by up to 33 per cent.

Operator safety is also a factor. Because the third speed is faster than normal walking speed, position of the actuating mechanism for this operating range requires the operator to ride the truck — thus functioning as a safety device. First two (slower) speeds are controlled by fingertip steering handle controls.

(New three-speed Worksaver rider-walkie electric fork trucks are manufactured by The Yale & Towne Manufacturing Company, 11000 Roosevelt Blvd., Philadelphia 15, Pennsylvania.)
6257 on Reader Service Slip.

DIAMOND roller chain

helps this machine produce and package 33,600 sandwiches per hour!



560 sandwiches every minute—made, stacked 4 to a package, wrapped and sealed—by The Lynch Corporation / Quality Machine Company combination unit. The secret is perfect synchronization and split-second timing at high operating speed...a typical example of DIAMOND Roller Chain precision performance.

Whatever your application—conveying, timing, synchronization, power transmission—you can rely on dependable, accurate DIAMOND Roller Chain for a long life of low-cost, trouble-free service.

DIAMOND CHAIN COMPANY, INC.
A Subsidiary of American Steel Foundries
Dept. 410 • 402 Kentucky Avenue, Indianapolis 7, Ind.
Offices and Distributors in All Principal Cities

DIAMOND ROLLER CHAINS ®

6259 on Reader Service Slip.

best way to seal any shaft!

...your most difficult shaft sealing problem, and you've named the best reason for using a Borg-Warner Mechanical Seal on that shaft.

The real practical value of Borg-Warner Seals is their ability to seal *effectively* under the toughest extremes of temperature and pressure ...for toxic, volatile or corrosive fluids...and even some abrasive liquids. *Result*—less down time, elimination of leakage and expensive stuffingbox maintenance.

Borg-Warner Mechanical Seals

NOW AVAILABLE—a new file folder of Borg-Warner Mechanical Seal designs shows some of the many types and applications possible for mixers, pumps, compressors, autoclaves and for special rotating shaft problems. Send for your copy today—there's no obligation.

A PRODUCT OF B-W BORG-WARNER

Borg-Warner® Mechanical Seals
P. O. Box 2017, Terminal Annex, Los Angeles 54, California

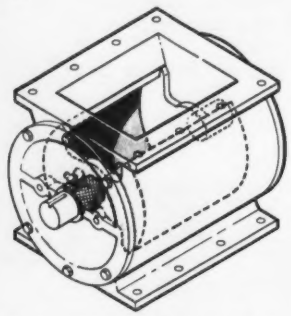
6260 on Reader Service Slip.

material handling

Rotary valve leakproof in closed position

Uses: Rotary valve was developed for use under silo deck slabs and bins.

Features-Description: Special double seal, in conjunction with unusually close clearances, prevents leakage in closed position (see drawing).



Valves are adaptable to either manual or remotely controlled motor operation

Additional advantage is the completely unrestricted opening, permitting free flow of pulverized materials having a normal tendency to arch.

Careful machining and aligning of trunion shafts assure free movement of rotor to open and closed positions, thus minimizing work stoppages. Sticking caused by packed material is avoided by knife edges and "V" slots at end of rotor.

Fully dust-tight bearings also cut down on maintenance time and costs.

(New rotary valves featuring special double seal are manufactured by Fuller Company, Subsidiary of General American Transportation Corporation, 176 Bridge St., Catasaqua, Pa.)
6261 on Reader Service Slip.

Updates full line of industrial trucks

Side-loading Traveloader is powered by electric motors; LP, gas or diesel engine. Rider-type fork trucks are operated by gasoline engines or electric motors.

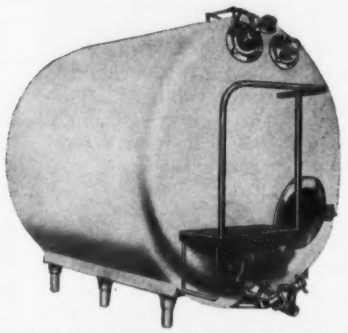
All trucks are described and

WALKER

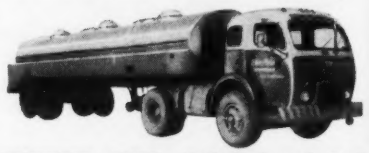
STORAGE *and* TRANSPORT EQUIPMENT

Wherever storage and transport of food products is required, Walker can supply the unit that will give you dependable economical performance.

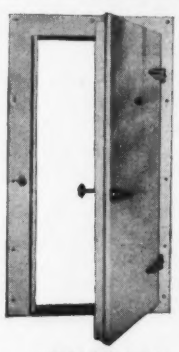
We will gladly supply you with complete data and prices on the equipment you need.



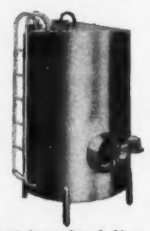
STORAGE TANKS, Round, Oval and Rectangular. All sizes Standard or Cold Wall surface.



TRANSPORT TANKS. Trailerized and truck mounted. One, two or three compartments.



FIBRE-GLASS COOLER DOORS. All types and sizes of insulated doors.



Stainless Steel Vertical Holding and Surge Tanks

Write today for literature on our complete line of stainless steel and fibre-glass equipment for the food industry.

WALKER

WALKER STAINLESS EQUIPMENT CO.
Dept. 45, New Lisbon, Wisconsin

6262 on Reader Service Slip.

HOLZ

RUBBER CONVEYOR CLEATS

INSTALL IN A JIFFY . . FOR LOW-COST SERVICE!

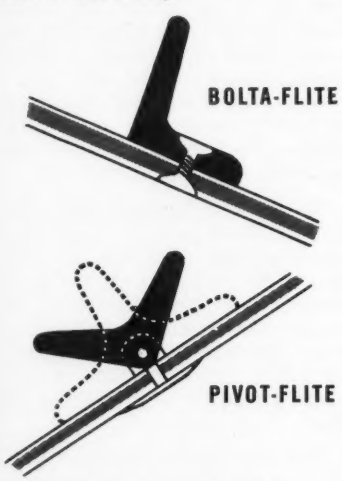
A few minutes, a punch and a screwdriver—are all you need to install efficient rubber lift-cleats for your conveyor system. Install them without removing the belt! There's a style for your particular need, too!

HOLZ Bolta-Flite cleats bolt solidly to chain, fabric or metal systems, for long term **heavy-duty** lifting power at minimum cost.

HOLZ Pivot-Flite, for medium and light duty, hinge on stainless steel pins—attach to belt with patented rubber fasteners to relieve stress when passing over small diameter pulleys; increase belt life!

HOLZ also offers **Vulca-Flite** cleats, permanently vulcanized to belt covers to your specification. Side flanges and special belt attachments available.

Whatever your product, there's a precision-made HOLZ rubber cleat to handle it with firm, yet gentle care. Get the full story: write for details today!



"If it's rubber we can make it!" . . . serving industry for a quarter-century

HOLZ RUBBER COMPANY, INC.
1133 SOUTH SACRAMENTO STREET, LODI, CALIFORNIA
Dealer inquiries solicited.

6263 on Reader Service Slip.

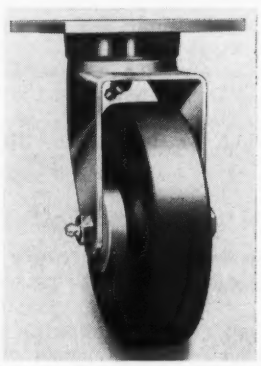
illustrated in six-page bulletin. Also included are electrically operated platform trucks and crane trucks. . . a complete line of trucks for every industrial need.

("Industrial Trucks," Bulletin 59, is available from Otis Elevator Company, Baker Industrial Division, 8000 Baker Ave., NW, Cleveland 2, Ohio.)
6264 on Reader Service Slip.

Steam, hot water cannot enter grease-seal caster

Caster, designed specifically for bakery use, features a pressure grease fitting which creates a seal to prevent entrance of steam or hot water. Seal retains protective grease and permits old grease to be purged to make room for fresh grease.

Easy to clean and keep clean, caster meets specifications of Bakery Industry Sanitation Standards Committee. Nieprene wheel of caster resists oil, grease, fatty acids, etc.

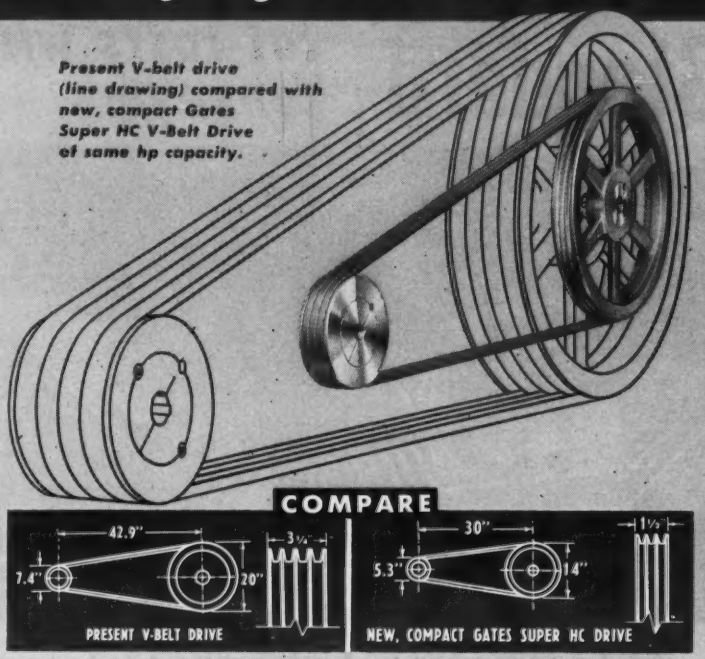


Flush top plate of caster is standard 4" by 4" with 3" by 3" hole spacing. Holes are stud recessed to prevent accumulation of dirt or other foreign material

All meeting surfaces are 90° or greater, with ½" clearance between top of fork and wheel tread — also between side of fork and side of wheel.

(Grease Seal Caster is product of Jarvis & Jarvis, Inc., Palmer, Mass.)
6265 on Reader Service Slip.

Designing NEW DRIVES?



Save up to 20%
with new high capacity V-belt drive

When you change the whole drive—both V-belts and sheaves—remember: The cost of a Gates Super HC V-Belt Drive is as much as 20% less than the cost of present V-belt drives of the same horsepower capacity.

A development of Specialized Research in the world's largest V-belt laboratories at Gates, the new Super HC V-Belt makes possible the most compact, lightest-weight, lowest-cost multiple V-belt drive you can put on any machine!

Cuts drive space as much as 50%

With Gates new Super HC V-Belt, sheave diameters and widths can be reduced 30% to 50%, center distances 20% and more. Bearing load is lightened and total space occupied by the drive may be cut as much as 50%.

"The Modern Way to Design Multiple V-Belt Drives" is an informative handbook on the Super HC Drive, available from your nearby Gates Distributor listed in the Yellow Pages of your phone book.

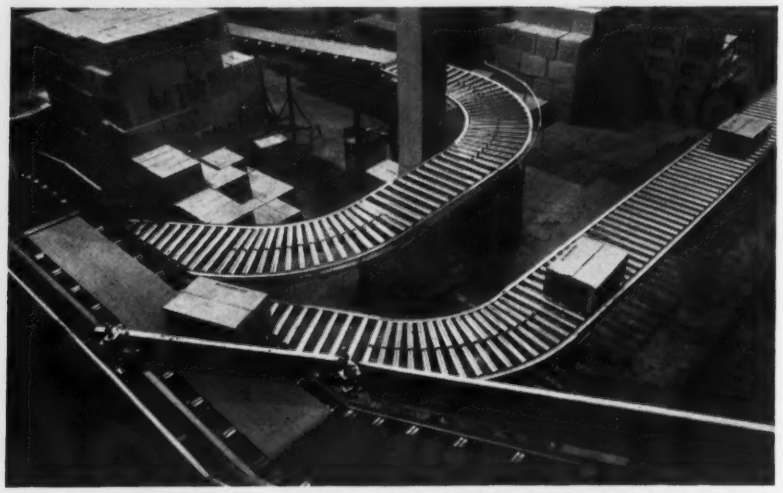
The Gates Rubber Co., Denver, Colorado
Gates Rubber of Canada Ltd., Brantford, Ont.
World's Largest Maker of V-Belts

TPA 439

Gates SUPER HC V-BELT Drives

6266 on Reader Service Slip.

Ask Standard ⋮ how to cut costs with conveyors



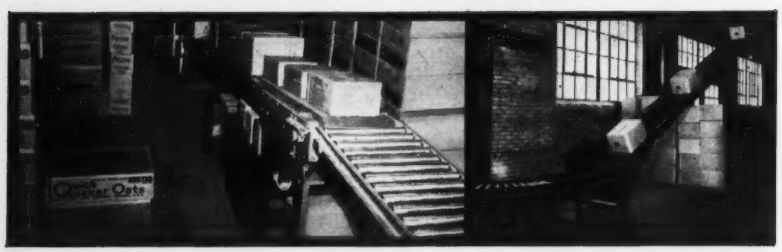
Order picking is expedited and simplified by this Standard system of roller and belt conveyors in large warehouse.

Roller and belt conveyors ease warehouse traffic jams

FAST flow of goods and simplified labor add up to more profitable warehouse operations.

Standard offers a wide variety of gravity and powered, permanent and portable conveyors — that can help you establish smooth, more profitable warehousing.

Spend a few moments with a Standard engineer. He'll show you how inexpensive Standard conveyors give you maximum flexibility at minimum cost. He'll show you, too, how Standard conveyors provide the many advantages of a custom-designed system at low cost. For the name of your nearby Standard engineer write STANDARD CONVEYOR COMPANY, General Offices: North St. Paul 9, Minn. Sales and Service in Principal Cities.



(LEFT) Belt-booster in a gravity roller conveyor "order picking" line. (RIGHT) Lift or lower floor-to-floor with an INCLINEBELT. Available in a wide range of heights and belt widths.

Write for Bulletin 309. Address Dept. Q-1, or contact the Standard engineer listed in your classified phone book.

Standard OVER 50 years of conveyor experience

GRAVITY & POWER CONVEYORS

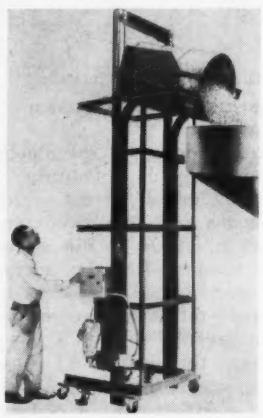
6267 on Reader Service Slip.

material handling

Elevates and dumps bulk drums or bags

Uses: Conveyor-dumper is designed for low-cost batch loading of mixers, blenders, kettles, tanks, bins and similar equipment.

Features-Description: Unit lifts and dumps a variety of standard-size drums; it also can be adapted to lift and discharge bags.



Models are stationary or mobile

Models are available in capacities to 400 lb, and with dumping heights to 12 ft.

(Cesco Jr. Model DU conveyor-dumper is manufactured by Conveyors and Dumpers, Inc., P.O. Box 567, West Caldwell, N.J.)
6268 on Reader Service Slip.

Even delivery with rotary paddle feeder

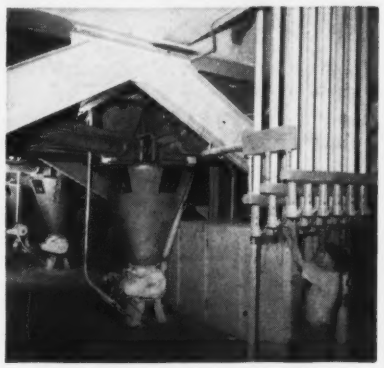
Feeder consists of series of paddles revolving around stable drum inside its housing. It is particularly suited for non-flushy ground and small-size granular materials. Regulating baffle assures even flow at discharge point.

Full details, as well as photographs and isometric drawing are presented in two-page data sheet.

("Rotary Paddle Feeder," Product Data Sheet 5901, is available from Richardson Scale Company, Van Houten Ave., Clifton, N.J.)
6269 on Reader Service Slip.

Problem:

To cut cost of conveying, storing and blending flour



Solution:

SPROUT-WALDRON PNEU-FLO® SYSTEM

With just one man on each shift, the C. F. Mueller Company unloads, blends and distributes 125,000,000 lbs. of flour a year at its six-story plant in Jersey City. Sprout-Waldron's bulk handling and Pneu-Flo positive pressure system recently installed has saved more than 25,000 square feet of floor space, reduced handling costs by $150,000 per year, freed more than $40,000 worth of equipment, simplified close check weighing of incoming raw materials, increased safety and reduced housekeeping and maintenance.

The system unloads and conveys to storage a minimum of one carload of flour in four hours; provides maximum diversity of storage; sizes all incoming material at a rate equal to or greater than the unloading rate; transfers the material at rates of 30,000 lbs. per hour.

The full story of this reliable pneumatic handling system is told in Bulletin I-57. Copies are available on request.

CW/105

SW SPROUT-WALDRON
Muncy, Pennsylvania

Size Reduction • Size Classification • Mixing
Bulk Materials Handling • Pelleting

6270 on Reader Service Slip.

Automatic system for handling "containerized cargo" . . .

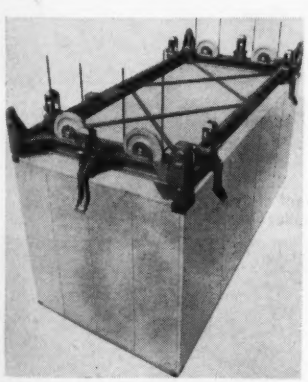
Adapts any shipper's containers to any carrier's equipment

First "containerized cargo" handling system to offer standardization to all shippers and carriers now is available to ship, truck and barge lines, and to railroads and airfreight operators.

"Speedloader" System consists essentially of top- and bottom-corner castings which are welded, riveted or otherwise fastened to the container itself; a crane lifting "spreader," equipped with coupler latches and wired for an electrical safety interlock system; aligning wings and lifting cable sheaves.

Simple operation

Coupler latches on the lifting "spreader" automatically engage into the cargo container top-corner castings without manual assistance when this assembly is lowered onto container by crane.

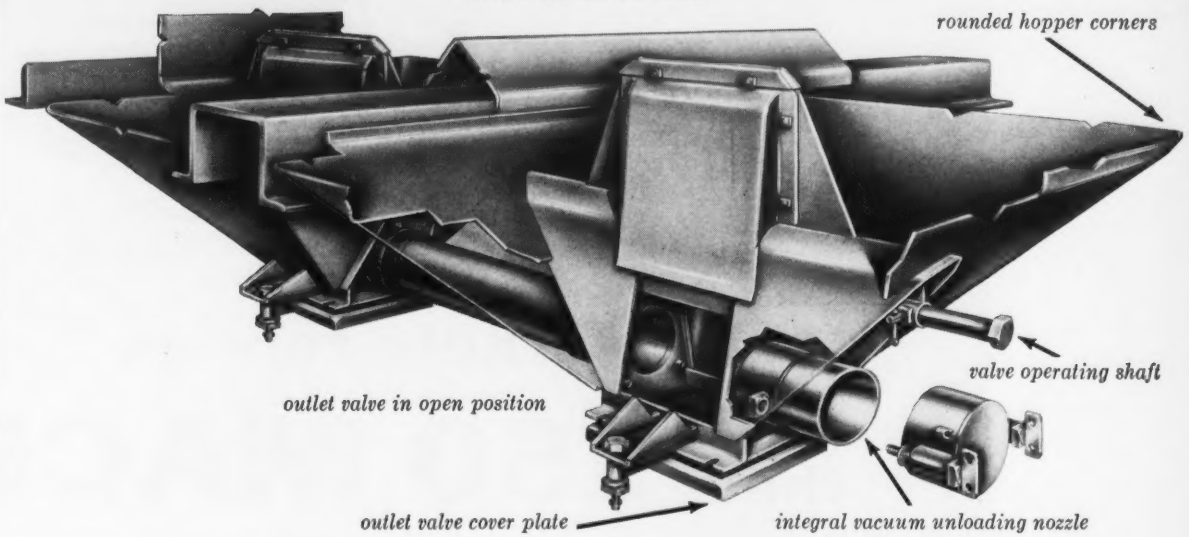


Speedloader components (dark above) adapt to any commercial container or crane

Where more than one length of container is to be handled, a supplemental spreader, for the container size needed, can be attached to the original

(*Continued on page 94*)

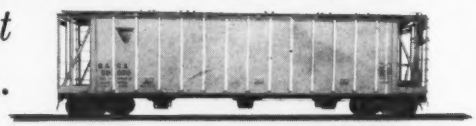
HOPPER ASSEMBLY



PROTECTED UNLOADING GATES OF DRY-FLO* CAR KEEP LOAD SAFE FROM CONTAMINATION

Unloading gates of the DRY-FLO car are entirely within the car insuring ease of operation and eliminating pickup of foreign material. Gates open and close vertically and are not subject to pressure from within. The rate of flow of product through the unloading gates can be adjusted as desired.

The DRY-FLO car is ideal for bulk shipment of dry ingredients, particularly products that *must be protected* from contamination.



COMPETITIVE IN PRICE WITH OTHER COVERED-HOPPER CARS—DO SO MUCH MORE

**Patent Rights Reserved*

Airslide® and Dry-Flo® Car Division

GENERAL AMERICAN TRANSPORTATION CORPORATION

135 South LaSalle Street • Chicago 3, Illinois
In Canada: Canadian General Transit Co., Ltd., Montreal
Offices in principal cities

6271 on Reader Service Slip.

NOTHING BUT THE LATEST. Acme depends on Macks for creating a favorable impression of the company with their attractive appearance on the road.

Acme Markets rely on their 150 MACKS for delivery on time, every time

Delivering the goods for American Stores Company, whose Acme Markets form a leading East Coast grocery chain, are 150 Mack tractors.

Acme's Macks work night and day hauling up to 60,000-lb. gross loads to the company's 820-store chain of supermarkets. These Mack tractors assure on-time delivery every time, while permitting Acme to operate with fewer, more centrally-located warehouses.

Thanks to Mack Thermodyne® engine power and Balanced Design—the exclusive Mack practice of manufacturing all its major components, which enables Macks to work as smooth-running, integrated units—Acme's Mack tractors cost far less to maintain and operate. Like all Macks, they outperform other trucks in heavy-duty service and outlast them, too.

Before purchasing a new unit, contact your Mack branch or distributor. Let him show you why only Mack can meet your needs when it comes to performance, economy and long life. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ont.

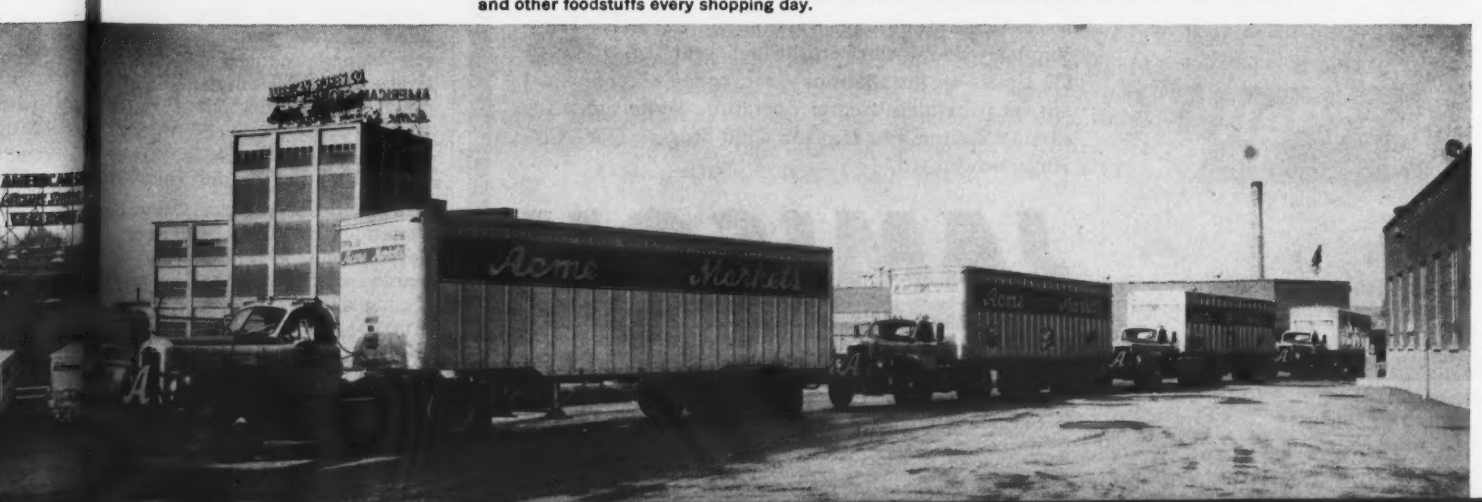
7332-A

MACK
FIRST NAME FOR
TRUCKS

VAST SCOPE of Acme's Philadelphia warehouse operations is shown in this photo. Huge plant shows trend of distribution in which larger, centrally-located warehouses take the place of numerous smaller ones.

READY TO ROLL are these Mack B-60 tractors operating out of Acme's Philadelphia warehouse. All in all, American Stores Company has 150 such units supplying its vast chain of East Coast supermarkets.

ON THE MOVE with fresh commodities for 820 supermarkets are several of the 150 Mack tractors operated by American Stores Company. These units operate day and night, insuring a fresh supply of groceries and other foodstuffs every shopping day.



For more information on product at left, circle 6272 see information request blank opposite last page.

Meet the New Uniform Codes for 0°F Temperature with Vap-r-tyt® Freezer Doors

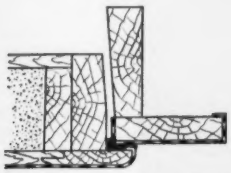
VAP-R-TYT METAL CLADDING

All metal seams locked and soldered

Penetrating bolt holes sealed

Prevents penetration of moisture under high vapor pressure

INFITTING DESIGN

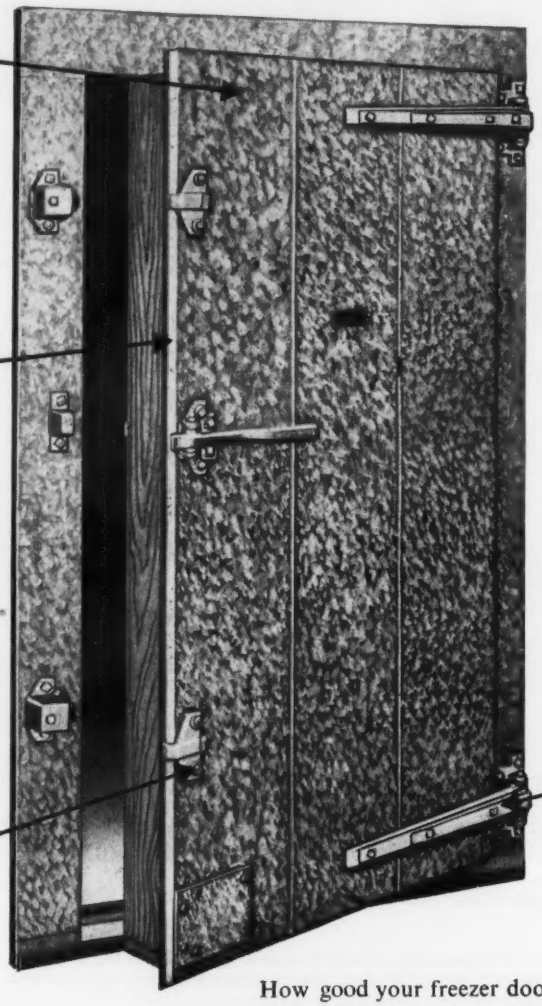


Requires less space than overlap type

Fits *into* wall

Requires shorter radius of swing

E-Z OPEN TWO-POINT FASTENER



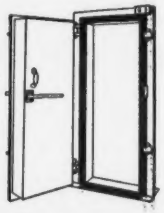
JAMISON FROSTOP® (optional)

Keeps doors from freezing shut

Safe temperature range eliminates dangers of overheating or condensation

Permits selection of any temperature between 60°F and 120°F

Carries Underwriters' Laboratories Inc. label



ADJUSTOFLEX HINGE

How good your freezer door performs depends on its basic design and construction. Jamison Lo-Temp Vap-r-tyt doors—proven through years of service in all types of installations—are today's economical answer to modern freezer operation. Write today for catalog Section 4 to Jamison Cold Storage Door Co., Hagerstown, Md.

JAMISON

COLD STORAGE DOORS

6273 on Reader Service Slip.

transportation

(*Continued from page* 91)

spreader, thus permitting intermittent handling of various size containers.

Speedloader System features a fail-safe electrical interlock system incorporating electrical limit switches at the spreader's four corners.

These limit switches render the electrical circuits inoperative and prevent the spreader (and hence the container attached) from being hoisted unless all coupler latches are engaged and their latch locks properly positioned.

Latch locks' special anti-creep feature insures safety during hoisting.

Also available as part of system are adapter castings for stacking cargo containers on ship deck or in terminal storage, hatch cover castings which lock containers to the deck, and anchor castings for use with rail flatcars and truck beds.

Versatility

While system's full potential for increased cargo handling and lower handling costs is realized only with fully automatic operation — electrical, hydraulic or pneumatic — plants or shipping docks having relatively small freight volume can handle Speedloader-equipped containers with little or no modification to existing equipment.

Workable conventional handling methods include electric cable hoists or manual chain-lifts suspended from fork trucks or A-frames. Holes in top-corner castings permit hook-hoisting.

Currently, Speedloader components are being supplied for 1500 cargo containers being produced for the Grace Line, first major shipping company to adopt the system. Containers are 17 by 8 by 8 ft each with capacity of over 40,000 lb, for dry cargo.

(National Speedloader Cargo Container Handling System is development of National Malleable and Steel Castings Company, Transportation Products Division, 10600 Quincy Ave., Cleveland 6, Ohio.)

6274 on Reader Service Slip.

Plants, Companies, Personalities

H. J. Mayer & Sons Co., Inc.

Chicago, old-line makers of seasonings and meat-curing compounds, announce

promotion of Elias Valdez to the position of company technical director.

The Hubinger Company

Keokuk, Iowa, has entered into agreement with A. E. Staley Manufacturing Company of Decatur, Ill., whereby Staley will be licensed on a royalty basis with sole right to manufacture and sell Hubinger's household laundry starches, both liquid and dry. Hubinger intends to concentrate on expansion of production of corn derivatives for industrial uses.

Cargill, Incorporated

has created a process development group within the research and product development division at its Minneapolis research headquarters. Elio J. Guidarelli has been promoted from process engineer in research to manager of the group. F. P. Spencer, former manager of economic survey research, has been named assistant to the research director, Dr. A. Richard Baldwin.

American Molasses Co.

New York City, has appointed Eugene Syverson vice president of its Inland Sugar Company subsidiary, Chicago.

For more information on product at right, circle 6275 see information request blank opposite last page.

"Looks like I'll be here all night, Boss, there's not a garage open"

Avoid costly breakdowns! Lease trucks from Hertz!

NO UPKEEP...NO INVESTMENT

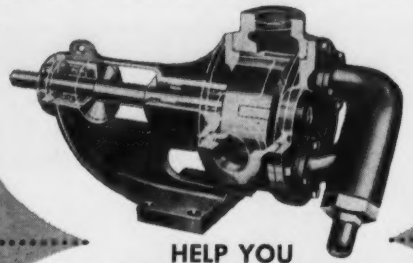
Had any "trouble" calls lately that meant a delay in shipment or costly repairs? Switch to Hertz Truck Lease Service with the assurance of having a fully serviced and maintained fleet. Hertz provides new GMC, Chevrolet or other sturdy trucks. Or, we'll buy your present units, rebuild them if needed, lease them back to you. Either way, Hertz keeps them in top operating condition.

Hertz reduces all your fleet accounting and upkeep problems to the writing of one budgetable check per week. You get out of the truck business and back into your own business. In addition to long term truck leasing, Hertz also *rents* extra trucks by the hour, day or week for your peak periods or any emergency. Rely on Hertz—America's No. 1 truck lessor—with more than 500 stations in the U. S. and Canada.

HERTZ TRUCK LEASE®

For more information, call your local Hertz office. Or write for the fact-filled booklet, "How to Get Out of the Truck Business," to Hertz Truck Lease, Dept. N-1, 218 S. Wabash, Chicago 4, Illinois.

VIKING STAINLESS STEEL PUMPS



HELP YOU CUT COSTS AND PROTECT THE PURITY OF YOUR PRODUCTS

Yes, Viking Heavy-Duty Type Pumps made of stainless steel, monel or other alloys can help protect the purity of your products and at the same time save you money.

You can save upwards of $300 to $400 on some sizes because these pumps can be operated up to 100% rated speed on thin liquids, increasing the capacity, thus requiring smaller size pumps.

Your exacting requirements can be met better than ever before because we now have entirely new, modern foundry facilities and manufacturing processes.

So, if your specifications call for stainless pumps, see how you, too, can save on this new line of full speed Vikings.

For Information, send today for Catalog MEP

VIKING PUMP COMPANY
Cedar Falls, Iowa, U.S.A. • In Canada, it's "ROTO-KING" Pumps
See Our Catalog in Sweet's Plant Engineer File

6276 on Reader Service Slip.

PAYS FOR ITSELF, USERS SAY

CONTROLLED HUMIDITY

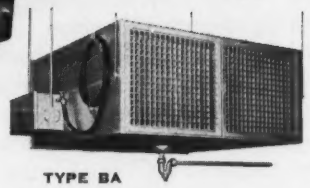
WITH LOW-COST
WATER OR STEAM

Bahnson UNIT HUMIDIFIERS

GUARANTEED UNITS PREVENT SPOILAGE, DEHYDRATION, PROCESSING AND STORAGE PROBLEMS

A complete line of 14 units in various sizes and capacities to fit your processing needs and any size area . . . cost as little as $10 per unit per year to operate . . . low first cost, too . . . easily installed on walls or from ceilings . . . automatic controls, long-life construction.

TYPE E



TYPE BA

FREE BOOKLET

Catalog F-7 illustrates and details full line of 14 humidifiers. Clip coupon to letterhead and mail today!

NAME _____

THE BAHNSON COMPANY
WINSTON-SALEM, N. C.

6277 on Reader Service Slip.

transportation

Dunnage bags lighter, stronger, easier handling

New models of inflatable dunnage bags incorporate design improvements indicated during service in the pneumatic bracing of thousands of shipments of fragile items and heavier merchandise.

New-model dunnage bags being inflated in loaded freight car

Weight has been reduced by eliminating the bladder formerly used (and with it the access hole needed for insertion of the bladder), making the bags a one-piece product, built like a tubeless tire, of 13-oz ballistic nylon with reinforced seams.

Bag walls are coated with 0.024-in. Neoprene outside, 0.036-in. Neoprene inside. Result, as observed in bags under pressure in the free state, is a gain in strength of 30 per cent. Resistance to scuffing also is improved.

Additional handles on the new-model bags — one at the middle of each edge on bags up to 4 by 6 ft, six handles on larger bags — permit easier positioning and withdrawal.

Improved valve design insures against slow leaks and consists of elements which are easily replaced if damaged by impact against car doors or loading docks when loading or unloading.

("Brace-Fast" dunnage bags are manufactured by New York Rubber Corporation, 100 Park Ave., New York 17, New York.)
6278 on Reader Service Slip.

cuts · mixes blends
at lightning speed
KOCH
Schnellkutter

Does dozens of laborious jobs in the institutional kitchen within a matter of seconds rather than minutes. Saves time and labor. Produces superior foods. For salads, meat loaves, soups, sauces, fillings, purees, sausage meat, and many other uses.

Capacities range from 25 to 60 quarts in the bowl. Prices from $995 to $2800.

Another instance of Koch leadership in food machinery.

Write today for free bulletin and other data. Also available is Koch General Catalog 177.

KOCH EQUIPMENT CO

A Division of
KOCH SUPPLIES INC.
2520 Holmes Street
Kansas City 8, Mo., U.S.A.
Phone Victor 2-3788

6279 on Reader Service Slip.

Metal tube, sanitary, recording rotameter quickly detaches for easy cleaning

Position of float translated into pneumatic or electric signal by magnetic converter.

Metal tube, sanitary, recording rotameter-transmitter measures and transmits flow rate of tomato juice, sugar solutions, molasses, beer, orange juice, mustard, vegetable oils, etc.

Instrument, which is designed for easy disassembly for cleaning, may be quickly detached from transmitters. Providing a straight-through passageway for fluids, it has no stagnant areas.

How float position is converted to reading

Unit uses a unique system to convert position of metering float into a direct reading. Metering float moves within an extension tube in direct response to flow rate changes. (See diagram)

A metering float extension, which has a magnet embedded in it, works in conjunction with a magnetic position converter to translate flow rate into a reading.

Converter consists of a magnetic iron strip formed into a helix and encapsulated in a non-magnetic stainless steel tube. Helix assembly is located parallel and adjacent to rotameter extension tube.

The leading edge of the helix is constantly attracted to the magnet, causing the position converter to turn as metering float moves in response to flow rate changes. Amount of movement, which is a measure of flow rate, is indicated as a reading on a flow scale.

Pneumatic or electric transmitters, for controlling process functions in relation to flow rate, are interchangeable and may be quickly attached or detached from metering tube.

To transmit flow rate either pneumatically or electrically, a stainless steel flow-sensing cam is mounted on top of the magnetic position converter as an integral part of the unit. (See diagram)

(*Continued on next page*)

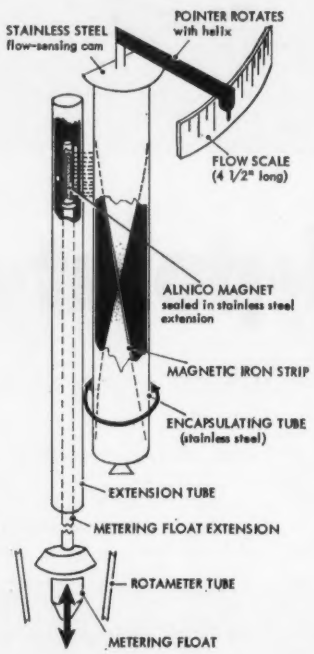


Diagram of magnetic position converter, which converts position of metering float into a reading. Note flow sensing cam which translates motion of metering float into a pneumatic or electric signal. See text in adjoining columns for complete explanation

IN YOUR PLANT...
STOP THESE 10 LOSSES WITH NEPTUNE *liquid* METERS

1 STOP SPOILED BATCHES Get automatic formula control with Auto-Stop meters.

2 STOP WAITING for liquids to creep up to gauge mark. Let the meter do it!

3 STOP MANPOWER LOSS hauling buckets or bags. Meters do the measuring while pumps do the work.

4 STOP GIVING AWAY INGREDIENTS by over-measurement just to be sure.

5 STOP BACK CHARGES for rejects. Meters save customers.

6 STOP GUESSING COSTS. With meters you always *know*.

7 STOP HAZARDS of spilled inflammables or messy liquids. Meters keep 'em in the pipe.

8 STOP RECEIPT LOSSES. Meters *prove* any shortages.

9 STOP SHIPPING LOSSES Meter-printed tickets give proof of honest delivery from your plant.

10 STOP CONTAMINATION of liquids...use Neptune Stainless meters.

METERING DOESN'T COST...IT PAYS BY MAKING THESE 10 SAVINGS REGULARLY IN YOUR PLANT.

NEPTUNE DOES ALL THESE THINGS FOR YOU:

- Cuts off flow at preset quantity
- "Memorizes" formulas of repeated batches
- Prints batch tickets showing amount delivered
- Controls pumps electrically
- Measures over 150 liquids...water, oils, syrups, brines, soaps, chemicals, etc.

GET THE FACTS
Ask for helpful Meter Data Bulletin 566 XFP. See Neptune Data Pages in Chemical Engineering Catalog.

neptune
Branches In:
ATLANTA • BOSTON
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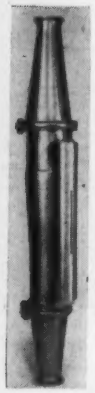
NEPTUNE METER COMPANY
19 West 50th Street • New York 20, N.Y.

6280 on Reader Service Slip.

(*Continued from preceding page*)

For pneumatic transmission, the edge of the cam intercepts an air stream between two nozzles as the magnetic position converter rotates in response to movement of the metering float. Amount of interception at any point is a measure of the flow rate.



Metal tube rotameter of sanitary design may be quickly disassembled for cleaning and sterilizing. Pneumatic or electric transmitter, for controlling process functions in relation to flow rate, may be quickly attached to or detached from metering tube

For electric transmission, the edge of the cam rotates over a differential transformer, causing a change in capacity corresponding to flow rate.

This cam is normally characterized to produce an output signal exactly linear with flow rate. It is precisely cut to correspond with actual flow rate, providing an air or electric output depending upon shape of cam.

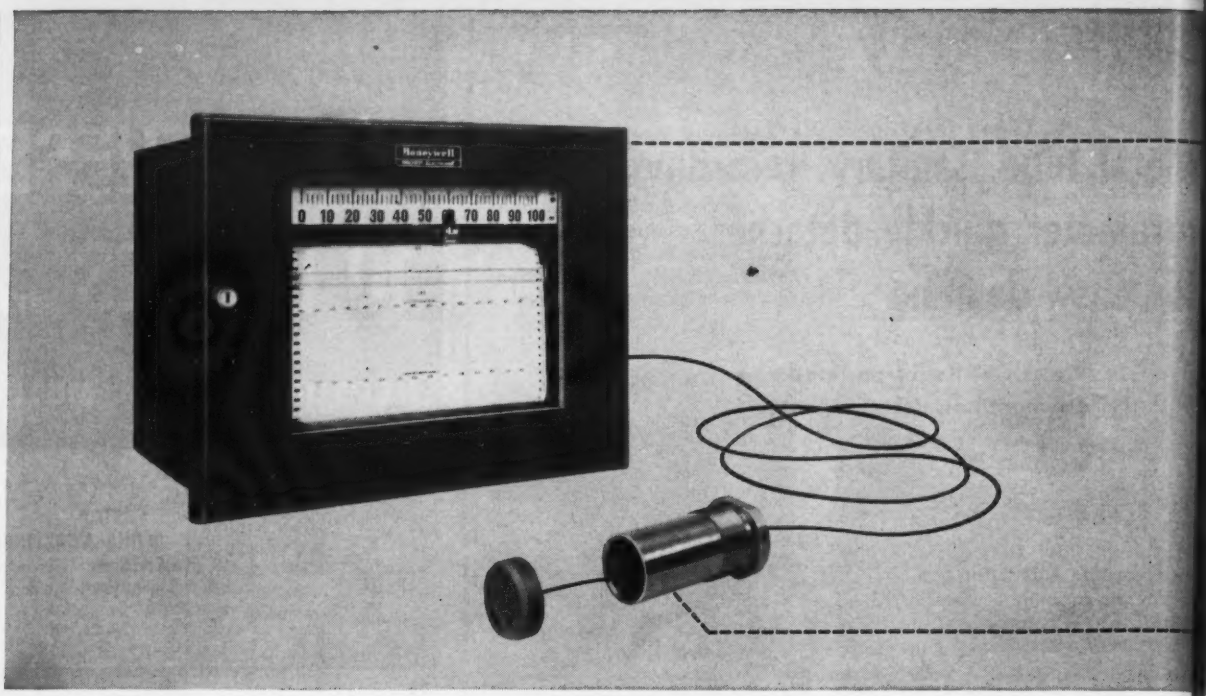
(Metal tube, sanitary, recording rotameter-transmitter is manufactured by Brooks Rotameter Company, PO Box 432, Lansdale, Pa.)
6281 on Reader Service Slip.

Proximity switch requires no power

Combines mechanical, proximity type sensing characteristics

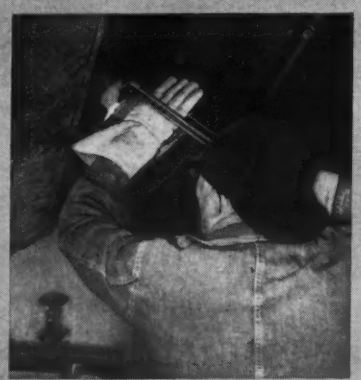
Proximity switch combines the desirable and necessary characteristics of both the conventional mechanical limit switch and the proximity type of sensing system.

It requires no power input and operates without transistors, tubes, coils, relays or amplifier.



End-point control

Install the AMIF end-point control system in one day



After holes are cut in renderer walls, sleeve is welded into place . . .

the sensing element is then screwed into the threaded sleeve, and . . .

leads from the sensing element are connected to the *ElectroniK* recorder.

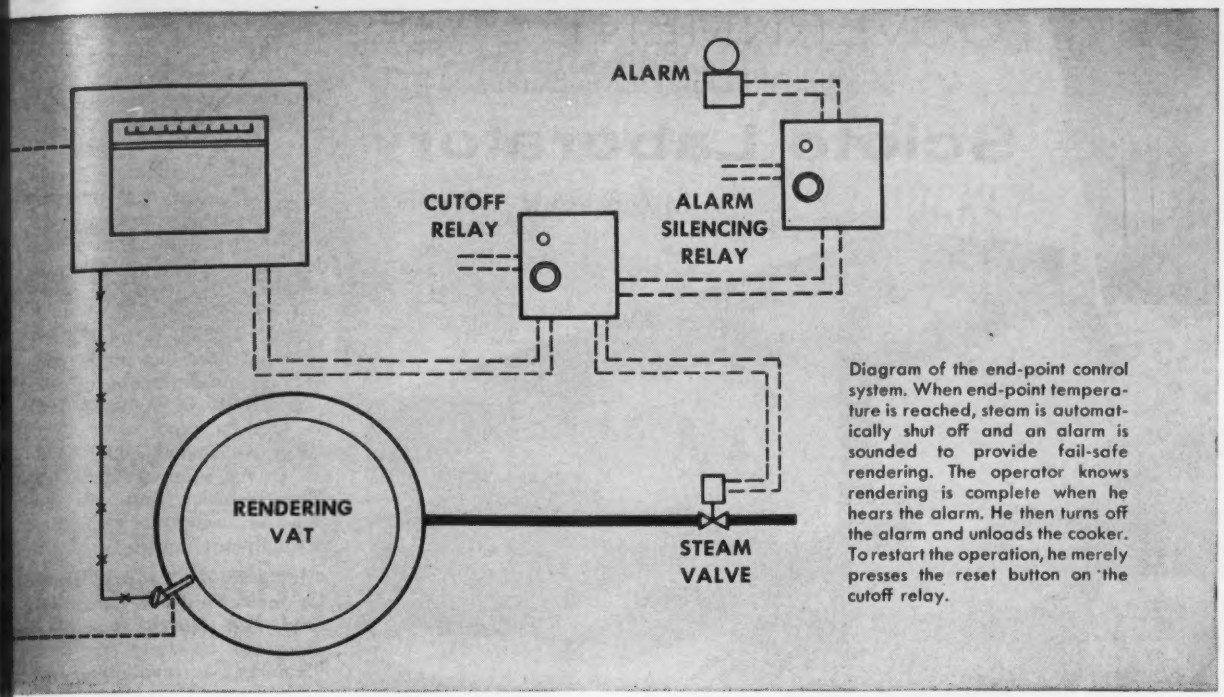


Diagram of the end-point control system. When end-point temperature is reached, steam is automatically shut off and an alarm is sounded to provide fail-safe rendering. The operator knows rendering is complete when he hears the alarm. He then turns off the alarm and unloads the cooker. To restart the operation, he merely presses the reset button on the cutoff relay.

ol improves dry rendering

AMIF *system prevents under- or over-cooking*

Maximum production of edible and inedible fats and high-grade cracklings comes only with close control of end-point temperature. Control of this variable is extremely critical, because temperature increases very rapidly at the point in the cook when moisture is at a minimum. AMIF system provides the sensitive, accurate control you need. It can bring you consistently higher yield and better color and keeping qualities, plus savings in heating costs . . . and can be used in both vacuum and pressure rendering.

The system *directly* measures liquid fat temperature. It consists of an *ElectroniK* strip chart recorder connected to a special thermocouple installed in the jacket of the rendering vat. This rugged thermocouple is made of specially tempered metal to resist shock and abrasion, and is flush mounted for freedom from obstruction. Its proximity to the charge makes it extremely sensitive to product temperature change. This thermocouple flashes the complete rendering story to the recorder, which keeps a continuous record of what goes on in the vat . . . shows at a glance when end-point is near or has been reached. It even reveals temporary stops of melter paddles.

The system can be equipped with automatic control to shut off steam and sound an alarm, enabling the operator to dump the cooker load at the critical end-point.

This basic temperature measurement method was pioneered by the AMIF on edible fats and oils. Subsequent work by Honeywell engineers with leaders in inedible rendering has further proved the distinct advantages of the system.

Your nearby Honeywell field engineer can give you complete details on this control system. Call him today . . . he's as near as your phone.

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75th YEAR PIONEERING THE FUTURE

Honeywell

First in Control

SINCE 1885

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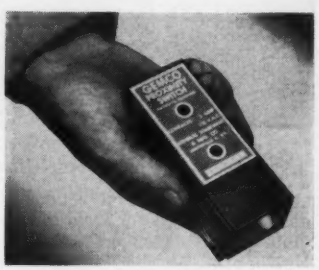
Unit consists of an armature, carrying a set of silver contacts disposed within the field of enclosed permanent magnets. The normally closed contacts are positively held closed by the force of that magnetic field.

When a foreign, ferrous part is brought into a sensing area (an area anywhere within 3/8" adjacent to the outside of the switch case), the switch is activated.

Thus, the armature snaps its contacts to the other position to close its normally open contacts. It remains in that position until the foreign, ferrous part is removed from that sensing area.

The association of magnets, armature and contacts is such that the switch is unaffected by anything other than very strong external magnetic fields. It is fail-safe in stray magnetic fields.



Proximity switch, containing only one moving part, is 1½" wide, 1½" deep and 4½" long

Proximity switch is hermetically sealed in a brass housing. It is impervious to coolants, abrasive dust and dirt or temperatures ranging from −50 to +250F.

Unit has been tested as high as 150 million operations with only minor evidence of wear.

(GEMCO Proximity Switch is manufactured by General Equipment and Manufacturing Company, Inc., Dept. TP, 116 S. Campbell, Louisville 6, Ky.)
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For more information on instrumentation developments, use the convenient self-mailing Reader Service Slip.

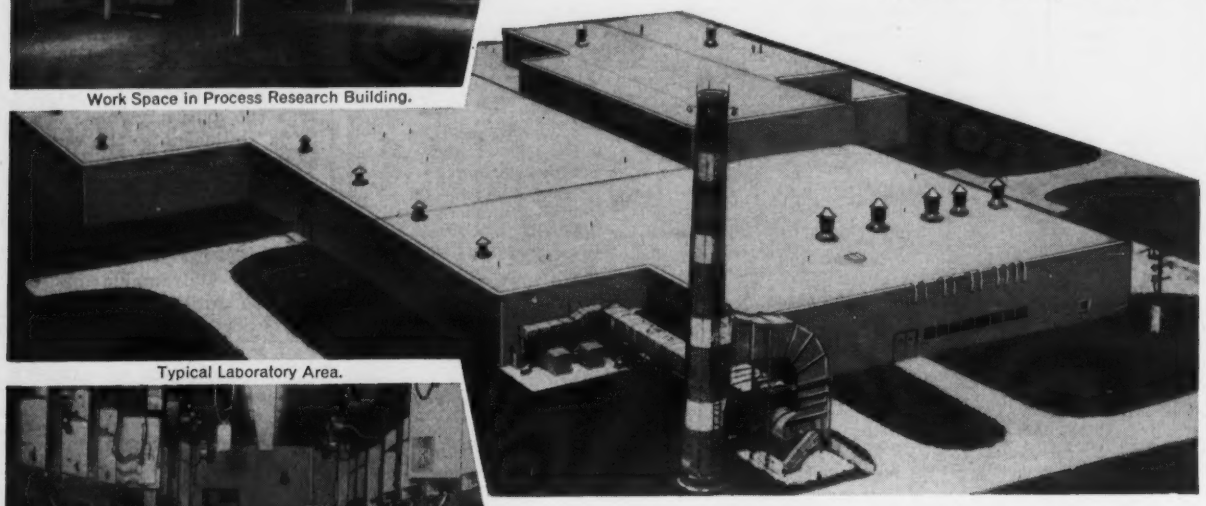
GOVERNMENT SALE

Sealed Bid Opening February 4, 1960

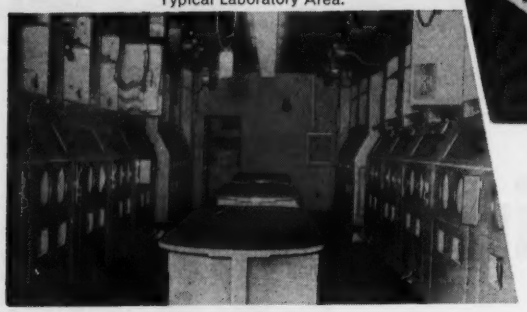
Scioto Laboratory

MARION, OHIO

Work Space in Process Research Building.



Typical Laboratory Area.



An Ideal Scientific Environment

The Scioto Laboratory near Marion, Ohio, is one of the very few research facilities available on today's market.

Here is an up-to-date laboratory well suited for research, development and processing in many areas of scientific endeavor, such as the physics, chemical and biological fields.

Analyze the following advantages of the Scioto Laboratory to your company:

LOCATION: The Scioto Laboratory is located two miles northeast of Marion, Ohio. Marion, with a population of approximately 40,000, is served by four major railroads—The Erie, The New York Central, The Chesapeake and Ohio, and The Pennsylvania. Five major highways and a small commercial airport are part of the Marion transportation structure.

Over 70 manufacturing firms are located in the Marion area. A number of well known companies have opened divisions in Marion after realizing the city's advantageous location, conducive to both an R & D atmosphere and easy accessibility to major plant operations.

LABORATORY AREA: The laboratory site consists of approximately 27 acres bordered by Likens and Victory Roads. Buildings on the property consist of the Process Research Building, Waste Disposal Plant, Cooling Tower, Boiler House, Oil Storage Tank, plus a pump house and truck loading docks. There is ample room for expansion.

PROCESS RESEARCH BUILDING: Constructed of steel and concrete frame and poured concrete foundation, this main building on the property is 2 stories plus basement with an area of approximately 196,500 square feet. Air conditioning, steam heat, sewer service, automatic sprinkler systems, telephone service, etc. are all available at the site. Various research and development equipment are installed in this building.

AUXILIARY BUILDINGS: Major auxiliary buildings on the property are of brick and/or steel construction, with concrete foundations. The Laboratory's Boiler House contains complete steam generating equipment plus telephone and fire alarm service. A railroad siding for coal delivery and 60 ton concrete coal silo are nearby. The Waste Disposal Plant and all other auxiliary structures contain the equipment required for laboratory operation.

UTILITIES: All needed utilities are now available or can be easily obtained at site.

Investigate THE SCIOTO LABORATORY. Send coupon for Bid Form B-OHIO-403B, folder and all information on the laboratory property buildings and equipment

TERMS—ALL AS IS, WHERE IS

Bid Deposit 5% of bid price (max. deposit $50,000). Easy credit terms. Title conveyance by quitclaim deed and bill of sale without warranty.

SEALED BIDS will be opened on February 4, 1960 at 3 P.M. (CST)

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Send immediately, complete details, specifications, and bid form B-OHIO-403B on the Scioto Laboratory and site offered for sale.

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instrumentation

Measures, controls fluid density in up to 3" pipes

Specification data and performance advantages of radiation gage for measuring and controlling fluid and slurry density in pipes up to three inches in diameter is covered in 2-page bulletin.

Gage is bolted into slurry or liquid line to make continuous measurement of specific gravity of material flowing through pipe.

Control signals may actuate valves, pumps, alarms, etc. With recorder, unit will provide an accurate record of through-put density.

(Bul ASR-3, on radiation gage for measuring and controlling fluid and slurry density in pipes up to three inches in diameter, is available from The Ohmart Corporation, 2236 Bogen St., Cincinnati 22, Ohio.)
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Selecting a liquid meter for a given application

Catalog of 20 pages provides a simplified basis for selecting a volumetric meter for any given application and for any liquid that can be metered.

Illustrated with numerous drawings and photos, catalog gives full details on meters and their many applications. Included among any of 200 liquids which can be metered are chemicals, cold water, hot water, oils, thinners, solvents, molasses, sirups, brine, etc.

("Niagara Meters", Bul 43, is available from Buffalo Meter Company, Incorporated, 2912 Main St., Buffalo, N. Y.)
6286 on Reader Service Slip.

BETTER HANDLING . . .

of bulk materials, unit loads, or of products in process keynote newly developed equipment described in Material Handling section, featured this month. It starts on page 83.

Many new food products blast-off with a satisfactory roar, only to disappear later, into the ocean of unsuccessful ventures. In spite of the millions in research, development, packaging, advertising and market testing behind them, only a relative few have all the essentials, plus that extra "thrust of power", of an individually developed **flavor** that's built right into the basic formula. FRIES & FRIES "Space Age Flavors" are engineered for the current era . . . the era of convenience foods. They're made for your product by people who know the flavor business with a thoroughness that comes from generations of experience. Launching a new product is expensive and difficult. Let a FRIES & FRIES Space Age Flavor give it that thrust necessary to put it into a long, swinging, profitable orbit!

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new literature

Classified Listing

Equipment

Ingredients

Supplies

Starred* items below have been more extensively reviewed elsewhere in the magazine. Items followed by (†) indicate literature offered by advertisers. Key number in the last line will help locate these reviews, which are numbered in sequence.

Management, Administration

Predetermining the injury repeater, 8 pp, (Brochure) Executive Assets, Inc.
6288 on Reader Service Slip.

Processing Equipment, Accessories

Selecting correct spray-nozzles for washing and cooling*, 12 pp, (Bul 5983) Chain Belt Company
6213 on Reader Service Slip.

Describes rotary coolers and dryers*, 28 pp, (Bul 159) Standard Steel Corporation
6178 on Reader Service Slip.

Lab freeze-drying equipment*, 40 pp, Arthur S. LaPine Co.
6196 on Reader Service Slip.

Large capacity, high regeneration plate heat exchangers*, 2 pp, (Bul S.A. 1095-11-58) The DeLaval Separator Company, Milk Plant Division
6189 on Reader Service Slip.

Crushers from laboratory size to heavy duty models*, 4 pp, (Bul 54-C) Metal Disintegrating Co., Inc., Pulverizing Machinery Div.
6181 on Reader Service Slip.

Range of packaged boilers for steam or hot water*, 4 pp, (Bul 5209-B) Sellers Engineering Company
6190 on Reader Service Slip.

Lists companies using equipment†, (Bul R-507) Rietz Manufacturing Co.
6289 on Reader Service Slip.

Spray nozzle information†, (Cat 24) Spraying Systems Co.
6290 on Reader Service Slip.

Stainless, positive displacement pumps†, (Cat MEP) Viking Pump Company
6291 on Reader Service Slip.

Sanitary, non-pulsating metering pump, 8 pp, (Bul 659) Mechanical Products Corporation
6292 on Reader Service Slip.

New FIL-FAST 12 POCKET FILLER

FOR CAN SIZES FROM 202 TO 404 DIA. x 200 TO 700 HIGH . . . by

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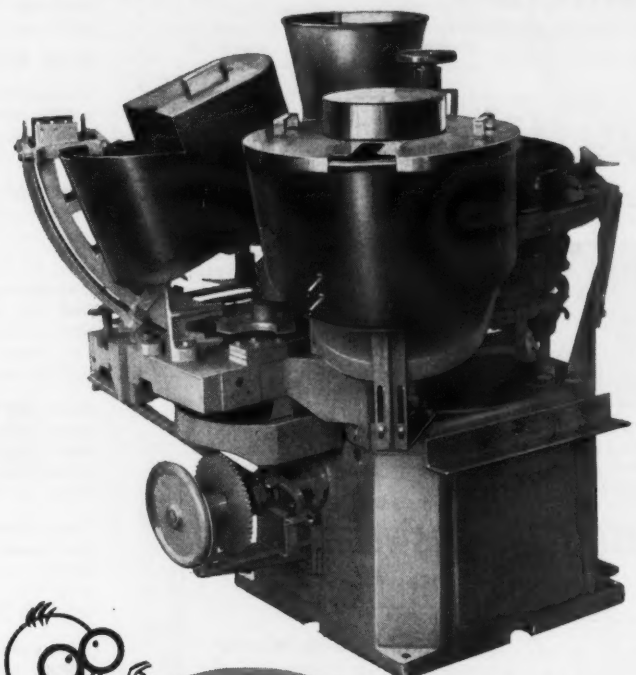

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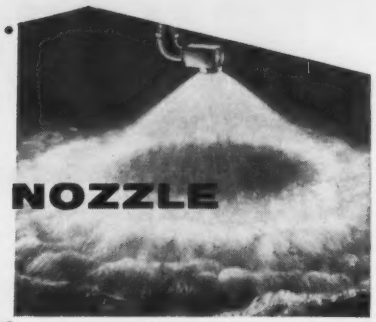

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new literature

Stainless tanks of all types†, (Lit.) Walker Stainless Equipment Co.
6296 on Reader Service Slip.

Spray nozzles humidify banana rooms†, (Cat 1) Monarch Mfg. Works, Inc.
6297 on Reader Service Slip.

Ingredients, Food Additives

File on bag closing equipment†, (Cat) Dave Fischbein Co.
6298 on Reader Service Slip.

Automatic Accumulator and Bundler†, (Bul 548) Hayssen Manufacturing Co.
6299 on Reader Service Slip.

Bulk Handling, Accessories

Uninterrupted flow with rotary paddle feeders*, 2 pp, (Data Sheet 5901) Richardson Scale Company
6269 on Reader Service Slip.

Vibratory feeders and bin vibrators†, (Fact File) Eriez Mfg. Co.
6300 on Reader Service Slip.

Unloads cars of granular, pulverized or small-lump materials†, (Bul 158) Stephens-Adams Mfg. Co., Standard Products Division
6301 on Reader Service Slip.

How self-dumping steel hoppers save costs in handling various bulk materials, 4 pp, (Bul 265) Roura Iron Works
6302 on Reader Service Slip.

Comprehensive information on line spiral conveyors and accessories, 56 pp, (Cat 951) Jeffrey Mfg. Co.
6303 on Reader Service Slip.

"Permaglas" mechanized bulk-storage units, 8 pp, (Bul MU-100) A. O. Smith
6304 on Reader Service Slip.

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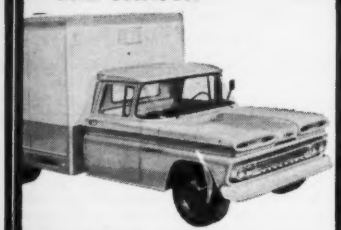

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Conveyors, Racks, Accessories

Roller and belt conveyor systems†, (Bul 309) Standard Conveyor Company
6308 on Reader Service Slip.

Quick view of complete line of feeding, cooling, conveying, drying equipment for the process industries, 12 pp, (Cat 978) Jeffrey Mfg. Company
6309 on Reader Service Slip.

Fork Trucks, Accessories

Offers full line of trucks*, 6 pp, (Bul 59) Otis Elevator Company, Baker Industrial Truck Division
6264 on Reader Service Slip.

Fork lift truck for three-ft aisle stacks on 12-ft tiers†, (Folder SP-25) Towmotor Corp.
6310 on Reader Service Slip.

Controls, Regulators, Indicators

Selecting a liquid meter for a given application*, 20 pp, Buffalo Meter Company, Inc.
6286 on Reader Service Slip.

Radiation gage measures, controls fluid, slurry density in 3 -in. pipes*, 2 pp, (Bul ASR-3) Ohmart Corporation.
6285 on Reader Service Slip.

Describes lines of pointer and indicator gages, two 2-pp buls, two 4-pp buls (Buls 59-B211, 59-B212, 59-B213, 59-B214) The Hays Corporation
6311 on Reader Service Slip.

For simple or complex sequence controlling†, (Bul 4-10A) The Foxboro Company
6312 on Reader Service Slip.

Bin level indicator†, (Cat BD-15) Bin-Dicator Company
6313 on Reader Service Slip.

Meters that count everything†, (Bul 200) Durant Mfg. Company
6314 on Reader Service Slip.

Liquid meter data†, (Bul 566 XFP) Neptune Meter Company
6315 on Reader Service Slip.

Construction and performance of bi-metal thermometers†, (Lit.) Daystrom-Weston Sales Division
6316 on Reader Service Slip.

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new literature

Heavy-duty, bi-metal thermometers†, (Lit.) Daystrom-Weston Sales Division
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Sanitation

Full line of fittings and valves for sanitary handling of liquids*, 38 pp, (Bul G-559), Cherry-Burrell Corporation
6206 on Reader Service Slip.

Full line of 14 humidifiers†, (Cat F-7) The Bahnson Company
6320 on Reader Service Slip.

Mixes hot and cold water, steam and cold water†, (Cat and Spec) Strahman Valves, Inc.
6321 on Reader Service Slip.

Piping, Pumps, Valves, Accessories

Guide for selecting sanitary centrifugal pumps, 16 pp, (Cat PC 759) G&H Products Corporation
6211 on Reader Service Slip.

Built-in sediment collection chamber in self-cleaning pipe strainer, 2 pp, (Bul 1210-1) Sarco Company, Inc.
6322 on Reader Service Slip.

Miscellaneous

Price list for radioactive compounds, 20 pp, (Cat — "Schedule E") Nuclear-Chicago
6323 on Reader Service Slip.

LP-gas and natural gas regulators for fork trucks, over-the-road trucks, stationary engines, 4 pp, (Bul B-200) Beam Products
6324 on Reader Service Slip.

Lightweight stock boxes of molded fiberglass, 1 p, Molded Fiberglass Tray Co.
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Portable magnesium loading ramps, 2 pp, Magnesium Company of America
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Low-cost aluminum dockboard for truck loading, 2 pp, Brooks & Perkins
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One-piece magnesium dockboards for truck and railcar loading, 4 pp, Brooks & Perkins
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Low-cost lightweight dock plates for truck loading, 2 pp, Magnesium Co. of America
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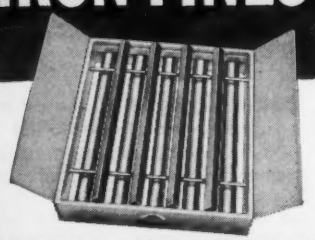

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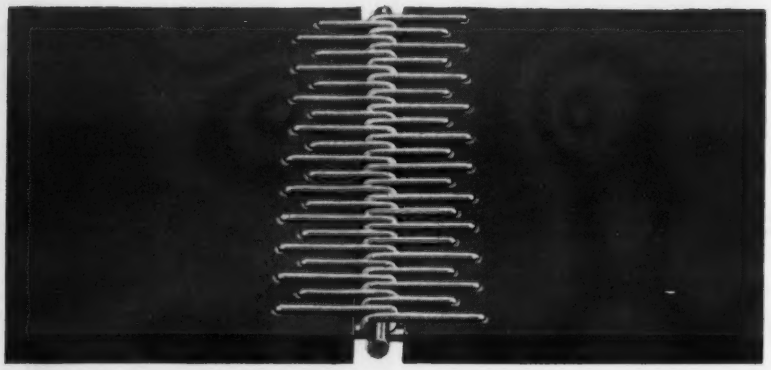
Hooks and Lacers



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Clipper BELT LACER COMPANY

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Highly Intimate Blends in 1 to 2 Minutes

Blends while discharging; No segregation or flotation

Sturtevant Rotary Blenders start 4-way blending while charging, continue it during discharge, thus producing highly intimate even blends of dry and semi-dry materials – within 3 to 5 minutes of start of charging.

Six *complete* blending cycles per hour are common. And Sturtevant's special action produces no particle reduction, cleavage or attritional heat – is highly effective yet gentle and safe even with explosives.

Receiving

Scoops cascade material as drum rotates. Movement forces material from both ends to middle. Thus blending is 4-way right from start of charging.

Discharging

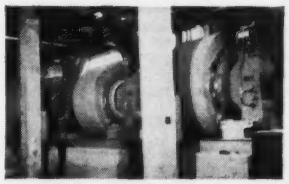
Single gate controls charge, discharge. Blending continues throughout discharge phase. Result is no segregation or flotation — highly intimate, even blends.

Self-cleaning, dust-sealed drum; one-man accessibility

Operation of Sturtevant Blenders is self-cleaning – drum interiors are completely dust-sealed. For inspection of all models one man simply loosens a few lugs to remove manhole cover – quickly and easily.

Nine standard models with capacities to 900 cu. ft.

10 cu. ft. Sturtevant Stainless Steel Blender at U.S. Steel's Applied Research Laboratories. Corrosion and contamination-proof, this unit handles batches up to 500 lbs. — is ideal for critical work or small runs.



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Fully or semi-automatic, or manually controlled operation

Constructed of carbon steel, stainless steel or Monel metal, Sturtevant Rotary Blenders are engineered to fit each customer's needs – can be supplied with injector sprays and any desired control system.

For more on Sturtevant Blenders, request Bulletin No. 080B. (Bulletins also available on Mixers, Air Separators, Micronizers, Crushers and Grinders.) Write today! STURTEVANT MILL CO., 122 Clayton St., Boston, Mass.

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January 1960

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that's interesting

Private labels perturb prestige packers

Sobering figures on percentage of market enjoyed by nationally advertised brands have been released by Market Research Corporation of America, 122 E. 42nd St., New York, N.Y.

Of 26 products studied, nationally advertised frozen orange juice placed at the "head" of the list — of products ignored. Only 27 per cent of purchases of frozen orange juice during 1958's first quarter were nationally advertised brands. The other 73 per cent consisted of private label and non-advertised packer brands of frozen juice.

Among other major food items, nationally advertised brands of regular coffee had 36 per cent of the market, margarine 39 per cent, frozen vegetables 47 per cent, canned tuna 53 per cent, canned pineapple 61 per cent, frozen meat pies 65 per cent, instant coffee 69 per cent, spaghetti sauce 74 per cent, instant puddings 91 per cent, cake mixes 91 per cent. National brands of canned spaghetti enjoyed a lofty 93 per cent of their market.

Un-magnetic personality best for package

Packages for food products should do a "disappearing act" in order to sell the product in self-service situations, reports Paraffined Carton Research Council, 111 W. Washington St., Chicago.

After attracting the customer, the package must, in the psychological sense, fade into the background while the product comes forward to become the element which is "seen" and remembered.

Examples are many butter and ice cream cartons, whose colorful backgrounds attract attention from a distance. Once the customer is up close, the product sells itself through handsome color illustrations of the product in use.

ANOTHER FOOD PROCESSOR PROTECTS QUALITY AND PROFITS WITH *Creamery Package®* EQUIPMENT

cools... heats... pumps and saves at

IMPERIAL SUGAR COMPANY Sugar Land Texas

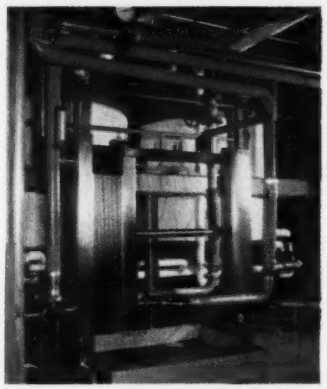
CP Crescent® Plate Heat Exchanger

Saves on cooling—3600 gph of liquid sugar (65 to 70 Brix) cooled from 170° F to 90° F. while heating char wash water.

Saves on heating—uses heat from liquid sugar to heat well water from 80° F. to 135° F. (before final heating to 200°) for char wash water while cooling liquid sugar.

Saves water—50% less water now needed for both operations.

CP Crescent also maintains controlled cooling to constant 90° F on a 24-hour-a-day schedule.



CP Crescent Plate Heat Exchanger cools liquid sugar, heats char wash water. Pan beneath Crescent is used with line clean-out on floor above.

CP Sanitary Centrifugal Stainless Steel Tanker Pump
Permits Extra Payload

Weighs less—quickly pays for itself in greater payload. Also costs about ⅓ less than previously used pumps, takes up less space and saves driver-and-truck unloading time.

CP 10 H.P. Sanitary Centrifugal Stainless Steel Pump saves space and weight on Imperial tanker.

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